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The Mysore Economic Journal

A Monthly Periodical devoted to the Discussion
of all Economic Topics of Interest

VOL. IX, 1923

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Consumers' Co-operative Societies. *

By F. Noyce, C.B.E., I.C.S., Trade Commissioner for India, London.

It may seem strange that we should heartily commend to the notice of co-operators in India a book in which co-operation in this country is only once mentioned. It is, however, exactly because India receives such scanty notice in the book that we do commend it. For the obvious and correct inference to be drawn from the omission is that consumers' co-operation has made such small progress here that, whilst there are no lessons to be drawn from Indian experience, our co-operators are in a position to profit by the experience of others. They could certainly have no better guide than the great French economist whose enthusiasm for co-operation and whose faith in its future have not made him blind to its weaknesses.

What is consumers' co-operation? And, since a consumers' co-operative society comes into being whenever a number of persons feeling the same need join together to satisfy it better than they could do by individual means and, therefore, every consumers' society has for its object production, wherein does it differ from producers' co-operation? The common aim of both is obviously the elimination of the middle man, but, whilst the characteristic function of consumers' co-operation is the most economical satisfaction of all the needs of life, that of producers' co-operation is the securing for the producer the maximum price for his product. The difference, therefore, lies in this. Consumers' co-operation is concerned with the whole field of production, producers' co-operation with particular products.

English co-operators have reason to look with pride on the part England has played in this great branch of the co-operative movement. It took its rise in England at Rochdale in Lancashire on 21st December 1844 when the society known as "The Equitable Pioneers of Rochdale" was founded. And England still has a big lead in membership and turnover, though not, for reasons which will be explained later, in the number of societies. It was an uneducated English weaver, Charles Howarth, who supplied the Rochdale Pioneers with the idea which proved the mainspring of co-operation, that of distributing the profits, not according to the net receipts or number of shares or equally among all the members, but in proportion to the trade of each member, this trade being checked in the simplest manner by means of dockets given of equal value to the money received at the cash desk. Howarth has not unaptly been dubbed the "Archimedes of Co-operation."

Belgium, France, and Germany followed England's example much later but although it was only in the last years of the nineteenth century that German co-operation began to expand, in the first fourteen years of this century Germany made gigantic strides. M. Gide gives some very interesting figures shewing the geographical distribution of the movement. In 1914, the British Isles had 1383 societies with 3,054,000 members and a turnover of £88 millions. Germany with 2,375 societies and two million members had a turnover of £28 millions. Russia had a turnover of £32 millions for its 13,000 societies and their 1½ million members. France stood fourth with 3,261 societies, 881,000 members

* Consumers' Co-operative Societies by Charles Gide, Professor of Political Economy in the Faculty of Laws, University of Paris. Translated from the French by the Staff of the Co-operative Reference Library, Dublin; Manchester. Co-operative Union, Limited. 7/6 net.

and a turnover of £12¾ millions. Space prevents our giving the full table but it is worthy of mention that Denmark and Switzerland have a larger proportion of members to each thousand inhabitants than the British Isles, the figures being 350,290 and 264 respectively. The war had not the effect one would have expected. The turnover of the British societies, for example, increased to £155 millions and their membership to 3,846,000, although the number of societies fell by 21. As M. Gide explains, the reason for the increase in turnover and membership was that those who remained at home increased their consumption on account of the rise in wages and allowances whilst the general rise in prices forced the public towards co-operation. The figures he gives bring out in a marked degree the centralization of societies in Great Britain which is undoubtedly a great element of their strength. Their average membership in 1914 was over 2,200 against 290 in France, their average turnover £64,000 against £4,000 and their average turnover per member £29—10—0 against £14—13—0. This high average per member in the United Kingdom means two things, firstly that the societies are not merely grocery shops but supply all needs and secondly that the members are very loyal to their societies, a rare quality in M. Gide's opinion and a sure test of co-operative zeal.

In his next chapter, M. Gide discusses the various systems of sale. He is wholeheartedly in favour of sales at current prices for the system of selling at net cost, exasperates the traders of the neighbourhood by a price-cutting competition which they are unable to maintain, prevents societies from selling to outsiders and prevents the societies from attaining any of the objects of co-operation, such as individual or collective saving,insurance, production, education or propaganda work or even the building up of capital which can only be done if surplus profits are left in the society as deposits. He is equally in favour of sales for cash since every establishment which gives credit must raise its prices or risk failure. Selling to the general public he would only allow as a means of attracting members and making a society known to the public and not as a permanent practice.

As for the division of profits, he prefers the Rochdale rule, under which these are distributed in money and condemns the Belgian system of paying the bonus in the form of dockets which may be exchanged for goods at the co-operative shop. This system has nothing to recommend it either from the economic point of view, since it forces the member to increase his consumption as he cannot use his bonus except by increasing his consumption, or from the moral point of view, since it reintroduces for the benefit of the co-operative societies, those very acts, such as the practice of shopkeepers who give their clients "discount stamps" which are convertible into goods in their own shops, which have been so strongly blamed in private businesses. As might have been expected from one who believes so strongly in the moral results of co-operation, M. Gide holds that, when a society divides the whole of its profits with the exception of the portion which the law compels it to place to reserve, it is paying too much attention to the interests of the individual and differs too little from the purely capitalist society. He, therefore, regrets that the English societies have departed from the rule of the Rochdale pioneers which devoted two and a half per cent of the bonus to education. The Rochdale pioneers reduced their educational grant from 2½ per cent to 1¼ per cent in 1904 and in 1914, out of the 802 societies which made grants for educational purposes only 77 made grants, based on profits, of 2½ per cent or more.

There is much of interest to Indian co-operators in the description of the various types of consumers' societies. groceries, bakeries, butchers' shops, restaurants, pharmacies, housing societies, societies for intellectual and recreation purposes and societies for co-operative insurance and also in the chapter on Co-operative Federations. The largest Co-operative Federation in the world is the English Co-operative Wholesale Society which M. Gide fears may come to reign almost despotically over all English co-operation. The figures are certainly staggering in their magnitude. The society started in 1864 with a membership of 50 societies and a capital of £1,000. In 1913, it had a membership of 1,200 societies, that is almost all the English societies, a share capital of £2,130,000, over £4 millions of loan capital, 21,000 clerks and workers, huge warehouses where it did business to the value of £65 millions in 1918 and 70 factories where it produced in that year 17.6 millions pounds worth of goods of every variety. It has a fleet of its own, its own docks at Manchester, a tallow factory in Australia, tea plantations in India and Ceylon, estates in England on which it grows strawberries and tomatoes and its own convalescent home for members of their

families. From its bank, the smallest societies can obtain loans at lower rates than the largest capitalists can secure from the Bank of England. It is truly a wonderful organization. Shall we ever see anything like it in India ?

M. Gide truly says that, of all the chapters in his book, the one which deals with the causes of success or failure of consumers' societies should be the most important. He virtually admits that it is not, the reason he gives being that, in order to get to the root of the matter the elaboration of a complete psychology of co-operation would be necessary and for this he has neither the space nor the information. The chapter is thus a disappointing one and in it M. Gide does little more than criticize the societies of his own country. He points out, what we know in India, that the very constitution of a Co-operative Society and the nature of things is bound to make good management difficult and that very delicate questions and even a complete policy which has been slowly and carefully built up may be left to the mercy of an absolutely blind vote. The increase in the number of French Societies and their consequent overlapping he regards as a most unfortunate characteristic and frankly admits that, if the co-operative movement in France is very much behind that in other countries, it is partly because the standard of morality in Co-operative Societies, even though generally superior to that of ordinary trade, is not yet very high. The Anglo-Germanic races, in his view, have to a far greater extent than the Celtic races, under which he classifies the French, the virtues which tend most to the success of co-operation, the love of order, the respect for discipline, the spirit of solidarity, and the passion for organization. Even the Latin peoples, more especially the Italians, have a greater aptitude for co-operative association than the French. Again, environment exercises a very strong influence on co-operation and an industrial district is much more favourable to consumers' co-operation than an agricultural one.

There is no more vital question in regard to the future of consumers' co-operation than the relation between Co-operative Societies and their employees. This is a matter of small importance when co-operative societies limit themselves to retail trade. But it is no longer so now that, as in England, the wage-earners employed by the societies are numbered by tens of thousands. In that country in 1917, 101,000 were employed in shops and 61,000 in factories. M. Gide discusses the various ways of reconciling the interests of the two classes. Should every co-operative employee be compelled to join his society or should he, as is the practice in many societies, be automatically excluded from membership? M. Gide would allow him to join or not as he chooses. He is opposed to the introduction of profit sharing in consumers' Co-operative Societies but apparently, for here he departs from his usual lucidity, favours the introduction of a system of copartnership under which the employee as such would become a shareholder but would not hold the ordinary shares acquired as a consuming member but a new kind of shares, working shares which would give him the right to part of the profit not as a consumer but as a producer, though the two capacities might be combined. He seems to favour most the third method of settling the disputes between Co-operative Societies and their employee that of making the employee manager semi-independent but responsible.

The fact that four (same accounts say ten) co-operative candidates are seeking election to the Parliament of the United Kingdom at the time these lines are being written lends special point to M. Gide's last chapter which is entitled "Co-operation and Socialism" and in which he discusses the relation between co-operation and politics. His conclusion that political action should be the result of the free initiative of individuals or bodies wholly distinct from Co-operative Societies appears to us eminently sound. So far, it has only been in France and Belgium that co-operation has taken on a political colour and he caustically remarks that the example of the former, which is almost at the bottom of the co-operative class, is enough to act as a warning of the danger of this policy.

It only remains to add that the book has been excellently translated from the French by the staff of the Co-operative Reference Library of Dublin which has had the help of the author himself. Only in one or two cases have we noticed any obscurity due to a too literal rendering of the French idiom.

A new article has appeared on the market in the form of waterproof sandpaper. This is particularly useful in the painting of automobiles, where it can be used with water at a considerable saving of time in the place of pumice stone, in rubbing out colour and colour varnish coats and also on first coats of rubbing varnish.

The Andhra University.

By Dewan Bahadur M. Ramachandra Rao, M.L.C.

The constitution of two Universities in Andhra Desha is an ideal to keep in view and to be worked up to as funds permit. Our Tamil brethren are anxious to have a University of their own for the Southern Districts of this Presidency and they have our full support and sympathy in their demand and we shall be prepared to give all the support we can to bring about the establishment of another University in the Tamil Districts. For the present we have the considered opinion of the highest educational authority of the Province, namely, the Senate of the Madras University that the proposal for the constitution of an Andhra University should have preference over all others. We sincerely trust, therefore, that our brethren of the Tamil country will give us their active support in the Legislative Council to the proposal for the formation of an Andhra University. They have always given us their support in public discussions and finally they accepted the proposal in the Senate unanimously and we ask them to give us their support and to continue their co-operation in putting these proposals finally into practical shape.

Unitary Teaching.

The Committee have expressed the opinion that the ideal to be aimed at is a unitary teaching University, but for practical reasons they suggest a modification of this ideal and recommended the recognition of all existing institutions in the Andhra Districts as affiliated Institutions. They propose, however, that all honours and post-graduate teaching should be entirely undertaken by the University and that the affiliated Colleges should confine themselves to the Arts and Science courses of the pass degree. I am not in favour of a University of the unitary type, in the present circumstances, nor do I see the advantage of establishing a unitary teaching University for so large an area.

It seems to me that the better course would be to establish a local University for the whole of the linguistic area or such part of it as you may decide without any marked difference between constituent and affiliated colleges as under the University Bill now under consideration and to permit each college to gradually specialize in a certain number of subjects. I am not also in favour of the proposal to entirely restrict the four first-grade Colleges to the pass degree of Arts and Science courses. The further development of these colleges for honours and post-graduate work would depend on local support and private munificence, and if such help is forthcoming there is no reason why their sphere of activity should be restricted. I think, on the whole, that it will be wise not to emphasize the unitary idea in teaching too much but to regard the proposed University as a local University intended to satisfy the needs of the Andhra Districts and to permit all existing agencies to fully develop their institutions to the highest state of efficiency subject to the general control of the University.

I fully share the enthusiasm of the Committee for technical studies, and I hope that it will be the distinguishing feature of the New University.

Site of the University.

The site of the University now remains to be noticed. The claims of the various places to serve as a site to the University have been referred to by the Committee and I am certain that this matter will be fully discussed at this conference. I sincerely trust that we may be able to come to some satisfactory conclusion before we disperse. I only wish to point out, however, that there is a feeling in the Deccan districts that any University located in the coast districts is too far out of the way for them; while we have every sympathy with them in this respect they have to recognize that the only existing institution of University grade at the present time in the Deccan districts is the first-grade College at Anantapur. There are at present four first-grade Colleges and second-grade Colleges and a very large number of High Schools feeding these Colleges in the Coast districts and if the University is to meet the needs of a majority of the students in the Andhra Desha it must in existing circumstances be located at one of the large educational centres in the Circars.

Among the places recommended by the Committee the nearest to the Deccan districts is Masulipatam but even if the University is located there, I am not sure whether it will fully meet with the wishes of the representatives of the Deccan districts, and so far as I can gather no place outside the Deccan area will meet with their approbation. The only

way to meet the wishes of our friends in the Deccan districts is to establish at the right time a University of the unitary type at Anantapur but for the present they must recognize the existing facts. This local support, I imagine, must partly weigh with us in a consideration of the question, but we cannot also forget ancient and historic traditions.

The selection of the site of the University must depend upon the amount of local support by way of endowment that may be available, upon historic associations and cultural traditions of the place and its future potentialities and also upon the type of the University that we desire to set up and finally on its general accessibility to the whole of the area placed within its jurisdiction. New Zealand adopted a novel method of reconciling the conflicting claims of the different centres in the country which may have some application here. While selecting one of the large towns as the headquarters of the University, the country was divided into University districts, and District Councils for holding the Convocations of the University and for transacting other business relating thereto were constituted, and the claim of the constituted colleges in different parts of the country to University rank were thus recognized. I sincerely hope that we may be able to reach a decision generally acceptable to all the districts in this matter.

Financing New Universities.

Finally I must refer to the most important subject of financing new Universities in this Presidency. We are up against a problem of great difficulty. The insistent claims of primary and secondary education, the general paucity of funds hitherto made available for educational expenditure in this Province and the insufficient recognition of the responsibility of the State in regard to the establishment of New Universities and generally for the reform of the University system have hitherto contributed not a little to the general stagnation that has overtaken us in this matter of University development. This stagnation is also in a great measure due to the direction of affairs having been hitherto in the hands of a Bureaucracy whose energies were directed more in the maintenance of peace and order rather than in the development of national efficiency.

There is already some amount of evidence that the democratic elements in the present Government of this Province are slowly transforming many of the notions that have hitherto prevailed in the development of education. Democracy is beginning to take an interest in the administration of its public funds.

It is from the Government, that is to say, from the taxation of the community that as a whole a large proportion of the existing outlay on University education in Great Britain is met. Thirty-two per cent of the annual expenditure on University education in Great Britain is now being paid by the State.

There are also other ways which the State can help educational progress and one of them is the creation of State endowments. There are examples of this class of assistance in the Dominions and also in America.

The last point that I should like to mention is the freedom which local authorities in Great Britain are enjoying in the matter of contributing to the Universities in their neighbourhood. Several of the civic Universities in Great Britain have been built up by substantial contributions not only from private individuals but also from the income derived from the local rates. I am mentioning these facts for more than one reason. You will see from the Universities Bill that six representatives of the District Boards are to sit as members of the Council of affiliated colleges proposed to be constituted under the new University Bill now under consideration. The co-operation of local authorities for the development of local Universities was invaluable in Great Britain and while I approve of representation proposed to be given to District Boards provision must also be made by statute that local authorities may contribute to the funds of any local University. This cannot be done at present and an opposite policy of prohibiting local bodies from contributing to certain local educational institutions has been initiated quite recently.

Private Benefactions.

I have thus far indicated some of the directions in which State action is needed in support of University expansion in this Province. I must now refer to private benefaction. Our landed Aristocracy is already playing a most useful and honourable part in the building up of our University life and the maintenance of our University institutions. We have, therefore, every hope that in the founding of a new University they will take their legitimate part and the presence of so many distinguished Maharajas and Rajas and other public men at this Conference is a very happy sign. We all sincerely hope before we disperse some tangible results will be obtained. I am,

however, anxious to impress upon the Minister of Education that once a beginning is made and a University is established, local patriotism will afford the necessary stimulus, and funds are likely to come in as I have already pointed out. The Welsh and Irish groups of Universities do not appear to have any income whatever from endowments and it is desirable that no further time should be lost in setting up a University for the Andhra Districts.

[At the Andhra Conference held at Vizagapatam on November 22, 1922 the following resolutions were passed :—

(I) Resolved that a University be established in and for the Telugu districts. (Note—"for" means that it does not exclude non-Andhra students residing in Telugu districts.)

(II) Resolved that the training for the Pass Degree in the Arts and Sciences and teaching be given by and through the colleges now existing and to be hereafter started, provided that all the colleges wherever situated that impart such training shall be placed on a footing of equality and such colleges shall be called "affiliated" colleges.

(III) Resolved that the training for the Honours and Post-Graduate courses and research work in those three faculties be imparted by the institutions established and maintained by the University and designated constituent colleges, provided that any other college may be authorized to participate in the work for such training in those three faculties, a college so authorized being also known as a constituent college.

(IV) The curricula for all the courses shall be prescribed and the examinations for all the courses shall be conducted by the University through such governing authorities as might be constituted by the University for the purpose.

As to the location and financial aid there was no unanimity among the members. Representatives of each district desired to have the location of the University in their own place, and there was a good deal of discussion which resulted in disagreement. Therefore the Conference proposed to adjourn the discussion of these questions to December and requested the Hon. Minister for Education to call another Conference. The Minister told them that it was not possible for him to accept the date proposed by the Conference. It would depend upon very many circumstances. When he went back to Madras he would do his best to call for a meeting if necessary some time later. He told them that as far as he was concerned he would do what he could in order to advance the cause of the Andhra University.—*Ed., M.E.J.*]

Local Bodies and Primary Education.

In his minute of dissent appended to the Report of the Select Committee on Compulsory Education in Bombay, Mr. P. R. Chikedi, M.L.C., makes certain novel suggestions which we reproduce below. The new body proposed by him would be objectionable if for nothing else at least for the fact that men would be difficult to obtain for a multiplicity of local bodies in each place. Mr. Chikodi's suggestions are also objectionable from the point of view of the people affected. Education in local areas can never progress unless it were localized. Here is his note :—I am not in favour of the principles underlying the clauses 10 and 13, and the definition of "local authority" in clause 2 of the amended Bill. My view is that the local authority should be a board entirely independent of either a Local Board or a municipality and should have the sole charge of the primary education in its district. Government should have the ultimate control and should be directly responsible for the management of the primary education but should exercise its authority through the local authority, which should be composed mainly of non-officials and representatives of important minorities. Further, Government should bear all the cost of the primary education, including compulsory education. This means that Government should henceforward relieve the local self-government from all the obligation of imparting the primary education and should take it upon their own shoulders. If this is done, it necessarily follows that they should find all the necessary money for the primary education and should control and administer it. If the municipalities and the local boards desire representation upon the local authority, then they should contribute towards the cost of education proportionately. As regards the compulsory elementary education Government should introduce it in such a manner that all boys and girls of the school-going age should come under compulsion within a definite period. For this purpose there should be a programme and it should find a place in the law itself.

Sukkur Barrage Scheme.

A Note by the Joint Secretary to Government of Bombay.

As mistaken ideas apparently prevail in some quarters as to the general nature of the proposed Sukkur Barrage Scheme and the immediate effect it will have on the canals in Lower Sind, the following brief note on the scheme is published for general information. The Sukkur Barrage and Canals Project consists of a masonry structure across the river Indus at a point about 3 miles below the Lansdowne Bridge at Sukkur, with a system of canals taking off above it on each bank of the river. The Barrage (a form of huge regulator) will consist of a masonry structure in the form of a double bridge. The lower level bridge will provide a road way across the river and this bridge will, eventually, be open to the public. The upper bridge is termed the "gate bridge" and will be used by the Engineers for working the barrage gates. This "gate bridge" will not be open for use by the general public. There will be 66 openings in the barrage each of 60 feet span. Each of these openings can be closed when required by huge iron gates. These gates will be operated in such a way as to ensure the water in the river at the barrage being maintained at a level of R. L. 194.5 feet (height above mean sea datum). This level will give a reading of approximately 10.5 feet on the Bukkur gauge. During the abkalani months (June to September inclusive) in each year the gates will, provided the natural level of the water in the river does not fall below about 10.5 feet on the Bukkur gauge, remain suspended clear of the water and, as the floor of the barrage will be constructed at a level appreciably *below* the mean bed level of the river, the "abkalani" floods will flow unobstructed as under existing conditions. Directly the level of the water in the river falls below the equivalent of about 10.5 feet on Bukkur gauge some of the gates will come into operation and the openings in the barrage will be closed only so much as is necessary to ensure a constant level at R. L. 194.50 feet or 10.5 feet on the Bukkur gauge. The waterway provided by the barrage openings allows for a maximum flood of 1,500,000 cusecs (cubic feet per second) passing down the river as against the record observed discharge of 949,000 cusecs which occurred on 1st August 1914 when the Bukkur gauge registered 17.00 feet. The afflux caused by the barrage structure will be less than one foot in height during the maximum flood allowed for and this afflux will not reach back to the Bukkur gorge. The existence of the barrage will, therefore, in no way add to any danger that there may exist of an evulsion of the river above Sukkur-Rohri.

The site chosen for the barrage is, as already stated, at a point about 3 miles below the Lansdowne Bridge. Both banks of the river in the reach between the gorge and the barrage site have been absolutely stable throughout the period for which records are available and this is the only stable section in the whole length of the river from its northernmost limit in Sind to Kotri. Likewise the river bed at the barrage site is remarkably stable.

Of the seven new canals that will take off immediately above the barrage the following three are on the right bank ; the North Western Perennial Canal, the Central Rice Canal and the South Eastern Perennial Canal. Those on the left bank, 4 in number, are the Eastern Nara Supply Channel (perennial), the Khairpur Feeder, East (kharif), the Rohri Canal (perennial), and the Khairpur Feeder, West (kharif). The bed levels and full supply levels of all these proposed canals have been designed so as to ensure their commanding the maximum areas possible in the tracts served by them, and those of them that are perennial will be assured of a continuous supply of water throughout the year. Of the right Bank Canals, the North Western (perennial) will serve an area to the north-west and west of the point where it takes off from the Indus. A large branch, the Khirthar, will take off from this canal near Ruk and will run north-west, cutting the existing Begari Inundation Canal in its 53rd mile, and serve a large area in the Upper Sind Frontier District and in the Nasirabad Tahsil of Kelat territory. The South Eastern (perennial) Canal will serve the area to the south-west and south of the Larkana District right down to the Munchar Lake and Schwan. Both these canals, as the classification "perennial" denotes, will flow throughout the year and will irrigate both "kharif" and "rabi" crops. The central portion of the Larkana Collectorate will be served by the Central Rice Canal, with a branch taking off near Ruk and running north-west, parallel to the Khirthar Branch of the North Western Canal, meeting the existing Begari Canal in its 53rd mile. The main canal will serve the existing

rice cultivation in the Larkana and Kamber areas and provide for an intensive rice area as far south as Khairpur, Nathanshah and Balishah. The branch running north-west to the Begari Canal will also serve a concentrated area of rice cultivation between Jaffrabad and Khairo Garhi in the Upper Sind Frontier District. The Rice Canal, as its name implies, will be solely for rice cultivation and will not have a perennial supply of water as it will only be opened during the "kharif" or hot weather season. On the left Bank of the river the two Khairpur Feeders, the East and West, are required to feed the existing systems of small canals in the Khairpur State. These are necessary as numerous inundation channels will be cut by the great Rohri Canal passing through the State and the lands to the east of this canal would otherwise get no water as no State lands will be irrigated by the Rohri Canal. The Khairpur State will meet a proportionate share, already agreed upon, of the cost of the Barrage as the two feeders will provide an absolutely assured kharif supply. Except for the head portion of about eight miles the Rohri Canal passes through the Khairpur State up to its 48th mile when it re-enters British territory. This Canal with its large branches is to irrigate the area on the left bank from the Southern boundary of Khairpur State to a line running approximately due east from a point about 5 miles south of Tando Mahomed Khan, the eastern boundary being the Jamrao Canal and the western boundary, the river Indus and the Hyderabad-Badin Railway. The Rohri Canal will flow throughout the year and will irrigate a vast acreage of rabi crops (wheat, cotton, etc.) as well as ordinary "kharif" crops. A limited area of rice will also be irrigated, no extension of cultivation of this crop being permitted. The Eastern Nara Supply Channel will be provided with a new head taking off immediately above the barrage and the existing channel, known as the eastern Nara, will be canalized and put into thorough order so as to provide an assured supply of water, throughout the year, to the Jamrao and Mithrao Canals and the smaller systems to the east of the latter. The Jamrao Canal will be remodelled, the Mithrao Canal will be enlarged and remodelled, a new branch called the Khipro Canal will be constructed and the Thar Wah will be enlarged and improved out of all recognition. The country served by these latter canals will be protected by means of a very comprehensive system of flood diversion banks. All these Canals, comprising the Eastern Nara System, will be given an ample assured supply of water and all except the T Canal, which will be a purely rice canal, wil given a perennial supply of water. The dra age of the area to be commanded by the p posed new canals, a matter of vital importa to the prosperity of the tracts, has been ca fully dealt with in the project.

All natural valleys and drainage lines h been carefully mapped out and in all ca these lines are to be left unobstructed. Th will form the natural boundaries between different distributaries, etc. Land will acquired for all these drainage channels and waterway and grading of each will receive v careful attention.

A very liberal provision for the cost of work has been made in the estimates. drainage lines of the Right Bank system canals will eventually tail into the gr Munchar Lake and thence into the Indus Sehwan by means of a very large regula across the proposed great drain. On Rohri Canal System all branch drains run i one or other of the 8 main drains. Of th latter, 5 drain into the Indus, 2 into the Pur Dhoro and thence to the sea, and one into Fuleli Canal which itself tails into the Pur Dhoro. All the drains of the Eastern N System also tail into the Purano Dhoro. supplies available in the Indus at Sukkur h been very carefully considered. The aver monthly discharges under present conditi will always be greater than the final requ ments of all the proposed canals combin after the full estimated development has b reached. On a few days during some of many years recorded the discharge of river has fallen below the total final requ ments of the canals, but these very low charges have occurred at long intervals last for only a few days at a time.

Thus, when full development occurs it m be necessary to work two or more of the ca in rotation for very short periods. (Th occasional days of deficiency occur only in "rabi" season. In the months of smal discharge the great canals will extract the m portion of the river supply and there only be a small surplus to pass below barrage. This may affect the discharge of Indus at Kotri and the rabi discharge of Fuleli Canal, but it is impossible to say, w out experience of the actual working of scheme, what the real effect will be, whic any case is limited to the tail of the ca and mainly to the rabi flow area. The aver

rabi area for the last 5 years on the Fuleli is 39,000 acres, of which ⅔ is bosi rabi and ⅓ rabi flow. These areas in themselves are of small proportions compared with the immense areas comprised in the scheme. There has, moreover, it should be noted, been a steady decrease in the rabi area in the last 20 years, mainly in the bosi area, not the rabi flow, which is almost a new thing on the Fuleli and was introduced, because, owing to the excessive consumption by rice growers in the upper reaches, the tail zamindars could not get water enough until the cold weather. This excessive consumption in the kharif will be reduced by the Barrage Project, which, as it will take 2 whole talukas off the Fuleli, will enable the zamindars to revert to their usual kharif irrigation, whether the rabi supply is sufficient or not. There is every indication, therefore, that they are likely to gain rather than lose by the Barrage.

The length of the river between Sukkur and Kotri is some 300 miles and the main channel with its back-waters forms an immense reservoir draining towards Kotri. It is, therefore, probable that this drainage may assist in mitigating the possible shortage at Kotri. A further favourable condition is the possible contribution to the supplies from the great drain at Sehwan. As already mentioned this great drain is to deal with the drainage of the whole area commanded by the Right Bank System. When final development takes place there will be a total of close on 20,000 cusecs discharge admitted into the Right Bank System throughout the abkalani season. It is reasonable to assume that an appreciable amount of this water will eventually drain, *via* the Munchar, into the Indus at Sehwan. An important factor affecting the supply of the Fuleli Canal is the *level* at which the river flows at Kotri. There is a marked tendency for higher gauge readings to be recorded for given discharges at Kotri. In other words, the bed level of the river is gradually rising owing to the gradual extension of the delta and consequent flattening of the gradient of the river from Kotri to the sea. There has also been a steady rise in the minimum gauge readings recorded at Kotri.

Some 30 years, from the date of completion of the Barrage, will be required for the full development of the rabi cultivation on all the proposed systems and during this period the effect that the withdrawals at Sukkur will have on the river at Kotri will be very carefully watched. The present cultivation in the area to be served by the proposed canals is 2,035,636 acres. The anticipated ultimate cultivation in the 30th year after completion of the scheme is 5,308,408 acres or an increase of rather more than 3¼ million acres. The probable increase of exportable surplus of produce due to the final development of the Sukkur Barrage and Canals Scheme is expected to be over 32 millions maunds made up as under :—Rice 3,722,300 maunds ; Cotton 3,901,160 maunds ; Wheat and Barley 22,972,670 maunds ; Oil Seeds 2,274,000 maunds.

The total estimated cost of the complete project, as amended by the Government of India, inclusive of expenditure aggregating Rs. 8,14,532 already incurred on the surveys and investigations, is Rs. 18,35,47,543. The Secretary of State for India has accorded his administrative and technical sanction to the project and there now only remains the question of financing the construction of the works. This matter is receiving the urgent and careful consideration of the Government of Bombay.

Vegetable Oil as Motor Fuel.

The extremely high cost of transportation of motor spirit into the interior of the Belgian Congo, largely due to tsetse flies, which make it impracticable to use animals for transporting goods and necessitate the use of native porters, led the Belgian Colonial Ministry to organize a trial of road tractors using palm oil as fuel. The results of these trials, according to the official United States "Commerce Reports," have opened up vast prospects for the development of Central Africa, and may be summarized as follows :—Palm oil, when used as sole fuel in semi-Diesel two or four cycle engines, gave full satisfaction. The engines ran normally, and the power developed is equal to, if not greater than, that obtained with kerosene. Nothing was noted that suggested possible difficulties in using palm oil in these engines. Starting up, without motor spirit injection, is good, and there is no carbonization. One large firm, which hold diamond and rubber concessions, possesses three tractors that run on palm oil and have ordered two more, very satisfactory service being rendered by those which have been in operation. These tests would indicate, then, that vegetable oils, which are so abundant and cheap in the tropics, can replace other fuels for semi-Diesel engines.

Why Living Costs are High in the United States.

By Virgil Jordan.

It is a fact rarely realized by the hundreds of citizens of European countries who look to America as a promised land, and who flock here under the immigration bars in the hope of finding less pressing the problem of making both ends meet, that living costs in the United States are actually higher than in almost any large industrial nation in the world. Of course, wages are higher, too, but not so much higher proportionately that the average worker has a much greater surplus from his year's labour than he would in his own country under normal conditions. There, to be sure, is the rub—"normal condition." For the disruption of European economic life since the war, and the enormous burden of debt which weighs it down, make the struggle for existence so severe that by comparison life in the United States seems a happy holiday. The freedom of movement, the shorter hours of work, the various means of protecting the worker against accident and disease and of making working conditions pleasant, extensively developed in the United States, and the facilities for education and opportunity for progress, all make American life attractive by comparison. But they do not alter the basic facts regarding the greater expense of living in the United States and the necessity of earning wages that make that costly living possible. That is why so many of the newcomers to America return each year to spend their earnings in their native countries, where their money goes farther and lasts longer.

Nothing is so disputed as how much it actually costs the worker to maintain a family in the United States to-day, but certain investigations have brought out figures that suggest how high living costs are in comparison with Europe. The worker in the anthracite mining region, for instance, is fairly well paid and has rather continuous employment. Wage rates in this field of mining have been maintained by a successful strike, and individual miners are reported at present to be earning as much as $100 a week in the present busy season following "the strike." But this is undoubtedly exceptional, and normally the average full time annual earnings of mine workers do not much exceed the cost of living for a family of five which was found by investigation early this year to be about $1,300. In urban sections where higher rents prevail, this figure would rise to $1,500 at least for a minimum living expenditure according to fair American standards. The clothing for such a family would cost from $250 to $300 per year and the fuel about $100, but the largest item in the cost of living is food, which takes from one-third to one half of the whole cost, or from $500 to $600.

Yet the United States produce in this year's harvest, according to latest estimates, 2,853 millions bushels of corn, 268 millions bushels of wheat, 1,229 millions of oats, 196 millions of barley, 14 millions of buckwheat, 535 millions of potatoes, 40 millions bushels of rice, and enormous crops of fruit, sugar beets, beans, cotton and wool.

The high cost of food and of other basic necessaries in face of the boundless natural resources and enormous crops of the country raise a question as to the factors that bring about the wide divergence between what the agricultural producer gets and what the consumer pays. For the farmer's income from his labour in producing this bounty of food has been estimated at on the average not more than $500 per year. He gets a very small portion of the price for which his product is sold in the market. The rest is eaten up in losses due to market conditions, deterioration, and in the cost of distribution and retail merchandising. This fact applies in greater or less measure to the whole range of products which enter into the living costs of the average family.

The extent to which the cost of living is unduly raised in the United States because of defective contact between the producer and the consumer has been forcefully brought out by a report just submitted to Congress by a Joint Commission of Agricultural Inquiry, based on data gathered from 15,000 questionnaires sent to representatives of various trades and industries in an effort to ascertain the range of actual costs, prices and margins in the period 1913 to 1922 with relation to the problem of marketing and distribution. This report reaches the conclusion that the country has now reached the point where it costs more to distribute and serve than it does to produce. Commodity values are lost in a mass of service costs and the time has come for a consideration of the fundamental problem of the distribution of the essentials of living.

The increasing cost of distribution is found to be partly due to the more complex character of modern living conditions in this country; partly to the caprice and variety of the consumer's requirements, customs and habits; partly to unorganized and unstandardized farm production which increases the risk of the middleman; partly to over capacity of plants, which increases capital cost and induces seasonal unemployment; partly to 'production in excess of effective demand, which congests the channels of distribution and adds to the charges for interest, storage and deterioration; partly to over competition, which brings about duplication of agencies and adds expensive services for accommodation, conveniences, and luxury to the cost of distribution; partly to the ever-widening radius of distribution; partly to the increased cost of transportation, and partly to the fact that the agencies of distribution are not co-ordinated so as to make possible an even flow of commodities from producer to consumer.

The commission recommends a greater uniformity of production and distribution through co-operative associations, more adequately organized and correlated terminal markets, and the establishment of qualified agencies to arbitrate disagreements between shippers and consigners as to value, conditions and quantity of commodities.

The lack of all these things, which have been highly developed in most European countries, the vast distances which separate producing regions from the large centres of population, the individualism of the American temperament, and the poor organization of the farmer have all combined to bring about this enormous waste and inefficiency in distribution which make the cost of living in America so much higher than it ought to be, in view of the country's great natural wealth and abundant production.

The Madras Government after examining the recommendations of the Indian Sugar Committee, re. acquisition of land for sugar factories, have formulated their general conclusions and announced the facilities they are prepared to give for the prosecution of schemes for development of the sugar industry. The Sugar Committee have shown that a sugar factory requires for economic and successful working at least six thousand acres of land from which to draw its supplies and that the factory itself must be situated in or close to the supply area since the cost of production is disproportionately enhanced if the source of supply and the factory are widely separated. The Government fear that it may be difficult to find compact blocks of State land of the minimum economic extent in this Presidency except perhaps in the Agency tracts the circumstances of which will be specially investigated. Where, however, such blocks of land exist and suitable irrigation facilities are available they will be prepared to consider the proposals from any sugar concern for granting such lands on lease for suitable periods and on favourable terms for the purpose of cane-growing and the erection of sugar factories. They will also be ready to place the technical expert advice of the officers of the Agricultural and Industrial Departments at the service of any who are *bona fide* interested in the matter. The irrigation facilities are essential where the land is to be devoted to cane-growing and where such facilities do not already exist the Government will be prepared to investigate and, so far as financial considerations permit, to undertake construction of works for the supply of water on reasonable terms in any case in which the scheme laid before them is in other respects such as to offer a fair prospect of success. Where no State land is available difficulties may arise in connection with the securing of private land required for the construction of sugar factories, for installation of pumping or other machinery, and similar purposes. The Government are of opinion that in such cases recourse to the provisions of the Land Acquisition Act would not be desirable but they will be prepared if necessary to assist by placing the services of their officers at the disposal of persons interested in sugar enterprises in acquiring the necessary land by private negotiations with the land owners. The Government have under consideration the question of deputing an officer of the Agricultural or the Industries Department to make a preliminary examination of any areas in the Agency tracts or elsewhere which may appear to be available and suitable for the cultivation of cane and for the installation of sugar factories. In this connection such points as the existence of facilities for the supply of water and of labour and the nature of available communications by road or by rail will also be investigated. The report on this preliminary examination will be published for the information of the public.

Aims of University Work.*

By Sir Harcourt Butler.

The principal work of the University must ever be to teach the under-graduates and to maintain high standards of academic culture. But no university in modern times is worthy of the name unless it devotes a considerable portion of its resources in money and in intelligence to the cultivation of research as a part of its ordinary functions. In laying the foundation stone I expressed the hope that in the Lucknow University you would cultivate humanities including particularly the study of history, political science, economics, geography and the languages. In the fields of mental sciences, such as philosophy, religious thought, literature and the study of languages, India's contributions to the advancement of learning have been signal and far-reaching. But the basic conceptions on which these noble intellectual structures are built up are very different in the East from what they are in the West. The West derives its inheritance mainly from classical Greek and Roman cultures whereas India derives its inheritance from its own quasi-axiomatic notions of philosophy, of moral conceptions, of social organization and of its form of literary expression. The full digestion of such in the western teaching of humanities is far more difficult to an average Indian student than is generally assumed. This is particularly marked in the matter of historical study. One searches almost in vain in the vast and splendid treasure houses of Sanskrit literature for anything like true historical texts such as since the days of Thucydides have been common and have been collected in the West. This is principally due to the intensity and power of Indian mentality which concentrated itself fixedly upon the essential principles of existence disdaining, as it were, the petty and transient changes in material development or political or ethnic phenomena. Islam, no doubt, brought to bear upon India the powerful effects of another civilization permeated with the elements derived from Hellenistic culture. But it still remains true that the historical perspective is one of the greatest needs of Indian students to-day. This has been recognized in the parent University of Allahabad to which we all owe so much and from which you have sprung. The school of historic study in that University under the impulse of Professor Rushbrook Williams has already achieved important results and the growth elsewhere of historical societies bears testimony to the growing interest in the subject. You, I am glad to say, have already a chair of Indian history and you have recently appointed a lecturer trained in epigraphy. The first volume of the Cambridge History of India is a landmark but there is a vast field to be explored before India's early history can be fully reconstructed from monuments, inscriptions and coins which fortunately are still abundant. This work was previously reserved for a small band of western Orientalists to whom must be added some very exceptional Indians like Dr. Rajendra Lal Mitra, Pandit Bhagavan Lal Indraji and that venerable great scholar who has honoured me with his friendship, Sir R. G. Bhandarkar. It has now attracted a number of competent Indian scholars. The conditions, therefore, are favourable for the extension of the historical studies on western critical lines. This is a matter which has for many years engaged my attention. Soon after becoming the first member of the Government of India in charge of the portfolio of Education, I summoned a conference of Orientalists then in India. One of the proposals of that conference was to create an Oriental Institute somewhat on the lines of the French Institute at Hanoi or the Russian Institute at Vladivostock. Its object was twofold to conserve ancient learning and also to promote critical research. It was felt there was room for such an institute notwithstanding the splendid achievements of the Archæological Department under the direction of Sir John Marshall. The proposal was rejected but I still have a vivid recollection of the character and compass of the discussions that accompanied it. The antiquities of a country can best be studied and examined by scholars of that country and the Universities of India have a grand opportunity before them of fulfilling the functions which elsewhere had been entrusted to a research institute. This is not a matter of academic interest alone. Thucydides said long ago that history was philosophy teaching by examples. It informs and guides political science by comparison, analysis and synthesis. No progress can be

* Part of Address delivered before the Lucknow University on Oct. 30, 1922.

sound and assured which does not rest upon the realities in the present and past of political science and economics. Its importance is obvious in a country which is nearing political and economic majority.

Here also you have begun well. Not only have you secured a number of devoted teachers who are enthusiastic on research in this field of work but you have founded also a Sociological society which will deal from a practical point of view, with the problems of economics, anthropology, ethnology and political science. This brings me to the question of study of geography in its large aspect. Geography has so far been sadly neglected in Indian Universities. In my first convocation speech, on behalf of the Government I presented a chair of Geography to the Allahabad University. It has not been found possible to fill that chair as yet, but I understand that the University seriously contemplate the opening of a school of geography. I earnestly hope that their efforts will be crowned with success. The activity of man in all ages and places is largely determined by his physical environment. The past of India strikingly illustrates the close relation between geography and history. The varied geographical features which distinguish the different regions and sub-divisions of India account largely for the role which they have played at varying periods in the political history of India or in the development of its culture and ethnography. The conditions of climate and cultivation, natural lines of communication, density and ethnic character of population are as necessary for the investigation of industrial development as they are of political growth. Judged by its extent, variety of its physical conditions and its independent articulation, India has like Europe a claim to be regarded as a subcontinent of Asia. In the syllabus for you in the B.A. examination, I am glad to find a special paper devoted to Indian economic conditions, geographical, sociological and political, and that in the study of the subject as a whole you lay sufficient emphasis on the geographical environment. May I hope that some day Lucknow will remove the reproach that rests on British India that it has no ethnographical museum. Here is a worthy object for the proverbial generosity of the taluqdars of Oudh.

The systematic study of the great classical languages of India, Sanskrit, Arabic and Persian is a very fitting subject for study here. Critical methods of the West have still to be applied over an almost unlimited area. The training of competent teachers of these languages on modern lines is a necessary function of the University. No one has a greater respect than I have for the Pandits and Maulvis. I have learnt it from my old friends and teachers, the late Dr. Venis, Sir Denison Ross and that grand scholar and explorer my friend, Sir Aurel Stein to whom I owe more than I can say. The profound traditional learning of the great Pandits and Maulvis is one of the glories of India and the world. Of many branches of classical lore these venerable scholars hold keys. But their methods require a life-long study of the subject of the most intensive kind and are unsuited to any general scheme of education which must include other subjects and so limit the time available for instruction in the classical language. Both Sanskrit and Arabic Grammar with their logical clearness and richness of inflection provide an excellent exercise for the mental training of the young mind, but only if the constructive principles of word formation are visualized, as it were, with the help of suitably arranged books. The traditional teaching of Sanskrit grammar as compressed with wonderful precision in the quasi-algebraic formulas of that great codifier of the Indian linguistic science, Panini, cannot meet these requirements in our secondary schools. Teachers are needed who with a thorough mastery of the structure of classical languages combine that wider outlook. As regards the educational purpose of the language and its literature which only philological training on modern and western lines can give, I am gratified to find that in selecting teachers of Oriental languages you have endeavoured to secure scholars who combine intensive study of the oriental type with western training according to modern methods.

I claim, gentlemen, that English has now become a classical language of India. Two different aims must be clearly distinguished in the University teaching of English. One is the study on true philological lines of the language and of the literature which it enshrines with a view to enabling the students to comprehend the intellectual past of the nation which has brought India into closer connection with the West than ever before. The other is to provide the Indian students, whatever their mother-tongue, with as complete a command of English in speech and written expression of thought as is needed by those who intend to take their share in the

civic life of the country, which, as a constituent part of the British Empire, must adopt English for its principal language of administration and public intercourse. The lines on which the latter aim can best be attained have been fully indicated in the report of the Calcutta University Commission and to follow them up is likely to become more and more easy with the spread and improvement of secondary education. Many of its recognized defects so far may, with full justice, be attributed to a very serious difficulty felt wherever instruction has to be conveyed through a language, a medium, foreign to a vast majority of both teachers and students, but in face of this difficulty some comfort may be derived from the fact that as far back as our historical information goes the administrative and the intellectual work of India has, for the most part, if not always, been carried on either in a language confined to the learned like Sanskrit or else in a foreign tongue like Persian. Neither the use of what in most respects has been a dead language for many centuries before the Muhammadan conquest, nor the subsequent predominance of Persian has prevented Indian intellectual individuality from ascertaining itself throughout those ages. It is too much to hope that the Indian individuality will maintain its vitality notwithstanding the advances of English languages to the great advantage of India and of human civilization as a whole.

Tea Seed Oil.

A bulletin of the Department of Agriculture, U. S. A., says :—An abundant supply of fat is of major importance in the consideration of nutrition, whether of the individual or the nation. Not only are fats wholesome, palatable, and most useful in cooking, but many also carry fat-soluble vitamin A.

During the recent war, in the countries where the fat supply was far below normal, great discomfort and a serious lowering of health and of resistance to disease were common and physiologists generally believe that this was due, to some extent at least, to lack to vitamin A. It should also be remembered that fats and oils represent the most concentrated source of body fuel, a fact that has an important bearing on the food transportation problem and on the cost of food to the consumer. An adequate national food policy therefore requires that an abundant fat supply be maintained during peace times as well as during war, and there is justification for the efforts made to find new sources of food fats and to make better use of those we now have.

For these reasons the Department of Agriculture (United States) has outlined a broad programme for the study of edible fats. It also includes studies of the thoroughness of digestion of fats and oils and the tolerance of the body to different kinds. The digestibility of 60 or more different fats and oils, some of animal and some of vegetable origin has been tested.

The best grades of tea-seed oil are used to some extent for food purposes in China and have been found as an adulterant of cabbage oil. The Chinese use poorer grades for burning and for soap making. That used in the tests here reported was a commercial product of a pale yellow colour and bland flavour.

The subjects in the present experiments were young men apparently in normal health, most of them students in a local university. They were familiar with this type of work, having served as subjects in previous experiments and were entirely trustworthy. Each experiment was carried on for three days and included nine meals. The special fat to be studied was incorporated in a cornstarch blanc-mange. This was eaten along with a basal ration which consisted of commercial wheat biscuits, oranges and sugar and which supplied a very small amount of fat in comparison with that in the blanc-mange.

The experiment was begun with three subjects, who ate some 50 grams of the oil per man per diem. Owing to an accident complete data are available from only one person. The subject remained in his usual good health and suffered no noticeable physiological disturbance. This was equally true for the two other subjects, both of whom ate the experimental diet for three days. The co-efficient of digestibility 91.2 per cent obtained in the one complete test is somewhat lower than is usual with oils liquid at body temperature, but the data are too limited to be taken as conclusive.

For purpose of general comparison the results of the experiments on the digestibility of oils and fats worked out as follows.—Cod-liver Oil 97.7 per cent, Java-almond Oil 97.0 per cent, Tea seed Oil 91.2 per cent, Water-melon-seed Oil 94.8 per cent and Deer-fat 81.7 per cent.

The Landschaften in Germany.

By S. Subbarama Ayyar, M.A., Dip. Econ., Senior Lecturer in Economics, Madras Christian College.

The International Institute of Agriculture, Rome, has just brought out a Report on the working of the Landschaften in Germany from 1770 to 1920. The monograph consists of two parts, one dealing with the origin and historical development of the Landschaften, and the other with their organization and working.

Like many other useful and epoch-making schemes for rural regeneration in Germany, the Landschaften received from the first the aid of the State. On 29th August, 1769, Frederick the Great approved of the draft inaugurating the institution with a view to set the impoverished landlords on their feet again whose resources and credit had been completely crippled during the Seven Years' War. The original Prussian Landschaften confined themselves solely to the mortgage credit needs of the landed nobility, but, owing to the prevailing dependence of the rural population at that time on the landed aristocracy, the nobility figured to the outside world as the sole exponents of agricultural interests. Though the land reforms of Stein and Hardenberg at the beginning of the 19th century created an independent peasant class, it was only in 1849 that a sovereign decree approved the resolution of the Landschaft of East Prussia deciding that every rural property of not less than 500 thalers in value the yield of which ensured economic independence to the owner, without his carrying on any other occupation, might be authorized as a Landschaft guarantee. The properties meeting these requirements were those of about 3 hectares in the fertile regions and those of 5 hectares in the less productive regions (an hectare=2½ acres). The next important step in the development of the Landschaft credit was taken in Prussia in 1873 when, owing to a temporary difficulty of attracting sufficient capital for agriculture and the practical inconvenience resulting from different quotations of the value of mortgage bonds in different provinces though the principles of the system were the same everywhere, measures had to be taken to federate the several banks into a wider association named the Central Landschaft for the States of Prussia with headquarters at Berlin. Henceforward the mortgage bonds issued by the Provincial Landschaften were no longer to be exclusively based on local capital, but on all the principal centres of Prussia and were also to be rendered available for international circulation; the Provincial Landschaften were however free to rely on their own local capital or to withdraw from the federation, if they so desired. There are in Germany at present 21 credit institutions of the Landschaft type, including the Central Landschaft for the Prussian States. The total bonds in circulation in 1920 amounted to 3,255,791,443 marks.

The Landschaft is a Co-operative Land Mortgage Bank in which the members who are the borrowers as well raise loans by issuing bonds in the market, in their joint and several liability, to the exact value of loans asked for, the rate of interest to the borrower being equal to the rate of interest of the bond. We shall take up *seriatim* the main points of its organization.

1. Membership.—Originally confined to the noble class, as we saw, the peasant proprietors were admitted in 1849, provided the value of their property was not less than 500 thalers, while the Kollmer (a class of owners of agricultural land intermediary between the nobility and the peasants, a middle class) were also admitted in 1908, at the instance of the Government, provided the value of the estate was also not less than 500 thalers. The general principle is now to admit the smallest area which allows the owner to draw his subsistence from it without carrying on any other occupation, *i.e.*, generally three to five acres. In the old Landschaften of Prussia and Silesia the membership is acquired by the mere possession of land in the area of the Landschaft's operations, but in some others the membership is acquired when the mortgage charge is established on the property serving as security for the loan and the admission of the borrower is effected by means of a legal or notarial deed. In the old Prussian Landschaften, the members are jointly and severally liable for the mortgage bonds, it being understood that a general guarantee exists of all the landed proprietors belonging to the Landschaft; in others (Kurmark, Newmark and New Pomerania) the properties on which loans have actually been made by means of the issue of bonds alone are liable; in still others (East Prussia, West Prussia and Silesia) the properties involved in the guarantee are all the estates in which loans can be made by the issue of

mortgage bonds, even if the owners have not actually obtained any loan from the Landschaft. Though the peasant and middle classes have been admitted into the Landschaften, their original character of ministering mainly to the needs of large estates persists to the present day. In the kingdom of Prussia, for instance, only 5.8 per cent of the properties between 5 and 20 hectares in area are mortgaged, while the proportion for properties between 20 and 100 hectares and over 100 hectares is 21.3 per cent and 66.3 per cent respectively; while the total number of properties are 361,566 (5—20 hectares), 154,101 (20—100 hectares) and 17,774 (over 100 hectares).

2. Loans.—To obtain credit for their members, the Landschaften issue mortgage bonds carrying interest, payable to bearer and, as a rule, the total value of those in circulation must not exceed the total value of the mortgages held by the Landschaft. Originally the borrower entered into an engagement with the investor and the Landschaften guaranteed to the latter the fulfilment of the engagement, but this was later abandoned in order to avoid accidents and local contingencies and to convert the bonds into ordinary negotiable securities. These bonds are divided into different classes, according to their rate of interest, their series or the letter they bear. Originally the holder of mortgage bonds could demand repayment every half-year, but about 1830 this right was revoked, but the Landschaften have the power to redeem the bonds at any time for repayment of loans, formation of sinking funds, conversion of bonds into others with a lower rate of interest, etc.

Properties to be mortgaged were used to be valued on the estimate either of yield or of capital value independently made by the agents of the Landschaften, but these have given place in most cases to the valuation made by the State for the imposition of the land tax. The amount lent may go up to two-thirds of the value of property, but for the purpose of extinguishing previous debts a loan up to five-sixths will be granted.

The sale of bonds and the obtaining of loans on property have been greatly facilitated by the banks and loan institutions set up in connection with most of the Landschaften. These institutions possess in nearly all cases the rights of co-operate bodies and are endowed by the Landschaften with a foundation capital varying from 2 to 5 million marks to the extent of which alone the Landschaften are liable for the liabilities of these banks. These are also permitted to engage in banking business of every kind except that of a speculative nature.

3. Repayment of Loans.—The debtor can discharge his debt at any moment in cash or mortgage bonds of the same value. The loans may also be repaid by the method of amortization, i.e., by means of annuities which automatically extinguish after a lapse of years the principal as well as the interest. Mortgage loans up to half the value or 20 times the net yield as estimated for the land-tax need not be amortized, but amounts exceeding half but less than two-thirds of the value of a property must be amortized at half-per cent per annum, to be paid half-yearly, till the excess is refunded, and in the case of loans up to five-sixths of the value of an estate the rate is two per cent per annum till the amount of loan is reduced to two-thirds and then half per cent as in the previous case till it is reduced to half the value of the property. The amortization payments are not, however, indefinitely carried forward to the reduction of a debt, but from a fund on which the debtor can draw and which has for him something of the advantage of a compulsory savings bank. Some small charges towards expenses of administration, entrance fees, the cost of deeds, stamp duty, etc., are paid into the funds of the Landschaft, but these represent only a very small increase on the interest chargeable on the loan, but any balance the Landschaft may have goes directly or indirectly to the benefit of the members.

4. Rate of Interest.—The rate of interest has varied from time to time. In 1919, for instance, of the total loans, 958,168,555 marks were at 4 per cent, 1,478,838,510 marks at 3½ per cent, 739,275 marks at 3⅓ per cent, and 429,596,600 marks at 3 per cent. Compare these with our 12 per cents (lowest), 18 per cents, 24 per cents and 75 per cents for loans in rural areas in India!

5. Special Privileges and Powers.—The Landschaft mortgage bonds are recognized as trust investments and therefore it can attract important capital representing the substance of widows and orphans which is usually invested for long periods. It has power to call up a loan at any time in cases where in consequence of deterioration of property, etc., the loan is no longer covered by the value of the property. It has also important powers of seizure of the estates of defaulting debtors without notice or an order of Court being necessary as well as extraordinary powers of forced sale for which the law courts are

expected to order at once on the application of the Landschaft without taking evidence.

6. ORGANIZATION AND MANAGEMENT.—Within the limits prescribed by the State the Landschaften are autonomous and manage their affairs strictly on the basis of self-government. The executive is the General Directorate which is helped by a Select Committee while the General Assembly is the supreme administrative organ.

The General Directorate is a board consisting of (1) the Director-General (and where they exist, the Directors of the local Landschaften) elected by the members subject to the approval of the State who must be a person inspiring confidence, holding a certain amount of landed property himself and fully acquainted with the agricultural situation of the Province ; (2) the General Councillors elected in the district assemblies of the landed proprietors with right to vote on all matters and with special powers to make arrangements for land valuations, supervise the management of estates, etc. ; and (3) the Syndics with qualifications necessary for judicial office elected in the district assemblies to pronounce considered opinions on legal matters. The employees of the Landschaft have the standing of State employees and are subject to State discipline.

The Select Committee, composed of delegates elected by the members and of the Directors, meets every year under the Presidency of the Director-General to consider the general position and has power to convoke the General Assembly.

The General Assembly, composed of deputies chosen by the members and of the Directors, meets under the presidency of a Commissioner appointed by the State and considers and takes decisions on proposals relating to the credit system and its improvement, changes in the constitution and such other matters brought forward by the Directorate.

7. The Landschaften have recently taken up the problem of dismortgaging or conversion of mortgage loans encumbering the estates obtained from private sources at higher rates of interest into the bonds of the Landschaften. There are two methods : (1) One is by registration of the mortgaged property in the land register of a limit beyond which the mortgage indebtedness could not go and compelling the borrower to undertake the gradual extinction on a large scale of debts by means of converting them into new Landschaft debts on the basis of amortization. (2) The borrower is permitted, in addition to the amortization fund, to pay a premium to insure his life with the Landschaft (the rates being lower than in private companies) so that in the event of death before the period of expiry of the loan his land is completely dismortgaged.

8. To indicate the relative position of the Landschaften in the general organization of credit in Germany, we may point out that out of the 17,000 millions of bonds in circulation in 1912 for all the organized land credit, urban and rural, 22.90 per cent belong to the Landschaften, 66.92 per cent to the Limited Liability Mortgage Banks, and 6.17 per cent to the State, communal and provincial institutions.

What is the lesson of this movement for us in India ? In many parts of India the rural landed property is "uneconomic" and therefore the mortgage loan is out of the question, a restriction which the German Landschaften themselves have found it necessary to impose. Where the areas are bigger the scheme has much scope of success, but the supreme obstacle in this case is that the landlord is mostly a "sleeping partner" leaving the actual cultivation in the hands of small tenants who have to shift for themselves as best as they can. We can only say that such landlords when they realize a sense of their duty will find immense benefit in organizations of this type. We hold, as Sir Frederick Nicholson pointed out as early as 1895, that mortgage credit is out of the question for the vast majority of our agricultural population and that their salvation lies in "Finding Raffeisen." We see no reason, however, to limit the Raffeisen type to *personal credit only* ; a sparing use of *land credit* where such is necessary for capital expenditure or permanent improvements may be engrafted as a normal feature in our rural Primary Co-operative Credit Societies.

The offer for sale of £1,600,000 Seven per cent Guaranteed Fifteen-year First Mortgage Debenture stock of the Daily Mail Trust has been very successful. The application lists were opened one morning at 10 o'clock, and closed ten minutes later, by which time, the amount had been many times over-subscribed. Even up to a late hour the previous night, it was impossible to obtain trustworthy figures as to the amount that had been subscribed for, but sufficient was known to make it certain that the allotments will represent only a small proportion of the sums applied for.

Army Expenditure in India.

Memo by Secretary, Indian Merchants' Chamber, Bombay.

My Committee cannot help remarking that the constitution of your Committee and the terms of reference to them are not altogether suitable under the circumstances of this country as they have been copied from the constitution and reference of the Geddes Committee in the United Kingdom. It is, however, permissible to hope that the absence of strong public opinion, which operated in the United Kingdom, to get reduced expenditure will be made up by an authoritative pronouncement from your Committee, and that the Indian Legislature will be assisted in the difficult task of fighting vested interests to save this country from bankruptcy and ruin.

The directions in which immediate economics should be effected regardless of any sentiment have been indicated in general terms in the speech of the President of this Chamber when he led the deputation to His Excellency the Viceroy on May 30. This, it is proposed to indicate here very briefly.

In the matter of the army, public opinion in India has always deprecated the forward policy in the Frontier which, it thinks, has been forced in this country. An immediate withdrawal from Wazistan and a pacific policy on the Frontier are necessary in the first instance. The scale on which the Army is maintained in India has always been regarded by Indian public opinion as in excess of the requirements for the defence of this country. Instances have not been wanting when that Army has been used for Imperial aggrandizement in the interests of Great Britain in other parts of the world.

My Committee are unanimously of the opinion that the greatest possible amount of retrenchment that could be and should be effected is in the military expenditure of the Government of India. My Committee consider that such heavy expenditure as is being incurred on one branch of the administration of the country is out of all proportion to its revenues. My Committee are not convinced that this heavy expenditure is incurred entirely in the interests of this country alone. They believe that this country is made to bear this cost at the expense of the other interests of the country, such as education, sanitation and industrial development, which have been starved. The country having reached its limit of taxable capacity, steps should be taken as early as possible, to develop the productive side of the nation's life. My Committee feel that already Indian revenue are insufficient to meet the cost of administration. A continual starvation of the productive agencies of the people can only lead to ruin which must be avoided.

Costly System.

It is disastrous that a very large part of the net revenue is spent on the Army alone and this is done in utter disregard of Indian opinion or Indian interests. This comes from the fact that India has been bound hand and foot to a costly system. British Army organization suitable for a wealthy country like Britain but beyond the means of a poor country like India, since here the Army was amalgamated with that of Britain. It has been contended by defenders of militarist policy that the strength and equipment of the Indian Army have been determined by the obligations which the Army may be called upon to meet in respect of the defence of India from external aggression. The British Government have often called upon India to provide military aid in non-Indian wars or expeditions, such as to China, Persia, Abyssinia, Suskin, Perak, Malta, Egypt, Soudan, South Africa, and in the late war, in France, Satomos, the Dardanelles, Egypt, Palestine, Mesopotamia and East Africa. A considerable part if not the whole cost of expeditions has been borne by India. That very fact however, that a large number of troops have been sent out of India, so many times, without endangering the safety of this country proves that the Government have been maintaining a far larger army than it required for the defence of India against foreign aggression.

On all these considerations, my Committee feel that the department that calls for the most urgent retrenchment is the Military Department. To say, that England offers the protection of her Navy to India in return for this, as has been said so often, is merely to repeat a platitude. If the burden on India for the maintenance of an Army in excess of her own requirements is to compensate for the services of the Navy, limits should be fixed to such a charge, and it should be made explicit and should be embodied in a compact between the Government of India and the Imperial Government after such compact

has been closely examined by the Indian Legislature.

EXPENDITURE ON EQUIPMENT.

The expenditure on the equipment of the average Indian soldier and the average English soldier has been rising in the last few years to such an extent that it needs drastic retrenchment. A poor country like India cannot afford a standing Army of this magnitude at all. Much less can it afford a standing Army consisting of British soldiers, the average cost of maintaining whom is very much in excess of the scale of living of ninety-five per cent of the population of this country. India is on the way to responsible government, the problem of difference should be worked out on lines suited to India by representative of the tax-payers, and the number and scale of British Units in the Indian Army should be forthwith reduced in such a way that within ten years the Indian Army should have none but Indian soldiers in its rank and file and the only British man in the Indian Army should be those officers who are essential for maintaining discipline and for training. If, on the other hand, this country is to be considered as solely in the military occupation by Britain then the entire expenditure and the paraphernalia of the reforms should be forthwith cut down.

The defence of this country, in the opinion of men Committee, should be not by means of a permanent standing army only, but by means of a small standing Army with a large reserve of men who have undergone training and who could be, at short notice, mobilized.

While these arrangements are being made with regard to the Army as a temporary measure, for some years at least a certain portion of the cost of maintaining the Indian Army should be borne by the United Kingdom if it is thought undesirable to disband a large number of British troops stationed in India. Indian public opinion has always resented arrangements for the Indian Army being made in the United Kingdom through the Committee of Imperial Defence or otherwise. Owing to the short service system the cost of the initial training of British soldiers has been passed on to India for the last several years, and India is made to bear more than her proper share of this burden. While paying magnificently for the British soldiers, there is no reason why India should also bear the cost of the initial training and equipment in the United Kingdom, particularly when, after the period of service in India, he drafts into the army in England. If any cost for training is to be incurred the training should take place in India itself.

A brief reference to the officers of the Indian Army will not be out of place. Those who are urging Indianisation in this direction have in mind, apart from the question of Indian self-respect, the question of cost. The initial salary, equipment, passage, leave of different kinds, housing facilities or allowances, horse allowance and various other charges fixed on a scale even higher than the scale of the United Kingdom are great injury to this country. Without entering into the technique of the army organization, my Committee desire to draw attention to the very large number of staff officers, on the utility of whose work doubts have been thrown by competent authorities. In conclusion, in the matter of the Army, my Committee desire to say that all talk of efficiency is mere moonshine. A nation, like an individual, must have only those things which it can afford, and we cannot possibly afford an Army, a section of whole component parts both officers and men, come from abroad and live on a standard, which, in the case of officers, is not enjoyed in more than one per cent of the population of this country. The Standing Army of India, as composed at present, is a crying scandal and a blot on Britain's good faith.

In the other Departments it is difficult for my Committee to suggest concrete items in which retrenchment could be effected, without the details before them. All these departments have their own relative values, and it is difficult to say at a given time what the relative importance of a particular department is in relation to its utility in the administration of the country. It is difficult also for my Committee to ascertain which of the departments are overstaffed and to what extent, and if so, to what degree retrenchment could be made without impairing their efficiency. But, as we have said, your Committee which will have full access to all such informations, and which will examine the work and the working of all departments of the administration will doubtless consider where economics could be effected and superfluities cut down. My Committee however feel that a department like the Ecclesiastical Department ought no longer to be at charge on public revenues.

REDUCTION OF DEPARTMENTS.

My Committee are also of the opinion that if the Reforms are meant to secure the real transfer of responsibility to elected Ministers

the Government of India Department which at present by a singular anomaly are retained to deal with subjects transferred in Provincial control should no longer exist. Those Departments are the following :—Local Self-Government, Public Health and Sanitation, Education, Public Works, Agriculture and Excise.

If these Departments are not abolished, the newly created Executive Memberships and Ministership could not be continued without the reproach that the country is having to pay double for the same functions. Several of these Imperial posts were created in Lord Curzon's time and one or two of these Inspector-Generalships attached to the Government at Delhi have been subsequently abolished. In this direction further steps should be taken, and all departments which were created after 1904–05 could be either abolished or amalgamated with other departments so as to reduce the number of highly paid officers and the charges incurred in connection with their tours, etc. My Committee would suggest the abolition of the Department of Commercial Intelligence and the Department of Statistics as separate departments, and of their being reduced as a subordinate branch of the Commerce and Industries Department and being worked therefrom without the paraphernalia of costly officers at the top. My Committee have also felt for a long time that the Criminal Investigation Department, as at present located at Delhi, costs very much more than it should. The general pacification of the country, by making the Reforms a dead reality, ought to secure considerable reduction under this head. In any case, extravagant expenditure for that branch which looks after political suspects is, my Committee feel, one which could be considerably reduced forthwith. The Departments of Publicity, in so far as they work both with the Central and with the Local Governments, are not performing functions without which this country cannot get along as it has got along all these years.

Currency Questions.

The printing of Indian currency notes, the purchase of silver for coinage and other functions performed in the United Kingdom (contracts with the Bank of England), have been, in the opinion of my Committee, running for a long time on a basis which is uneconomic. These functions should be disintegrated. The printing of notes could be taken up in this country with considerable economy to the State. The other functions at present performed by the Bank of England in the United Kingdom should be handed over to the Imperial Bank of India. Further, the work at present done by the Department of Currency under the Controller of Currency should also be handed to the Imperial Bank of India, and the office of the Controller of Currency should be abolished. The entrusting of these functions to the Imperial Bank of India, however, could not be carried out until some restrictions were put on certain proportion of the shares in the Imperial Bank of India, which could be held by foreigners, and until the constitution of the Imperial Bank, as provided at present, could be revised so as to involve a much greater supervision and control by the Indian Legislature. Should your Committee desire further and complete details on this scheme, my Committee would be glad to send them to them.

My Committee feel that the India Council in the United Kingdom is not performing any useful or essential work, but is merely a survival, and at present offers lucrative sinecures for retiring members of the Indian Civil Serivce. The India Council, in the opinion of my Committee, should be forthwith abolished and no charge in connection therewith should be payable from the revenues of India.

Salaries.

While not grading the scale of salaries fixed for the Viceroy and Provincial Governors, it is high time that the charges under this head were regulated particularly in view of the increase of Governorships after the Reforms. Any revision in this direction could also be accompanied by the curtailment of the establishment charges the entertainment and other charges incurred in connection with the Viceregal Lodge and the Provincial Government Houses.

Indianization of the Services.

The question of the Indianization of Service has been before the public in India for a long time, and the Government of India themselves have recognized the strength and justice of this feeling in the O'Donnal Circular. With regard to the services, my Committee feel that the solution, consistent with the straitened finance of the country, is to be found in the provincialization of most of the services. Any attempt to institute a new All-India service should be rigorously put down, and some of the existing services should be split up among the various provinces to work on the new basis with special allowance to the present numbers so as not to reduce their remuneration.

The Fish-Oil Industry.

By K. R. Narayana Iyer, B.A., Agricultural Chemist, Travancore.

The problem of the Fish-Oil industry is indeed a very fascinating problem for the chemist and the manufacturer. The ideal condition of a given industry is that the country where the raw materials are provided, should also be the country in which the finished article is manufactured from that locally produced raw material. But, this fundamental truth is hardly realized by us in our industries to-day. India has no dearth whatsoever regarding raw materials, but in whatever direction we turn, the same thing is noticed, low production, and a failure to fully use her enormous possibilities. In this article, an attempt is made to point out the several possible ways of developing the Fish-Oil industry in our country.

A very large portion of the Fish Oil that is produced in India is from Malabar. The oil is chiefly obtained from sardines. Fish Oils may be divided into fish body oils and fish liver oils, and sardine oil is obtained from the body of sardine-fish. The methods used in the manufacture of sardine oil vary greatly in details. The oldest method is to allow the tissues to ferment in masses, when the oil exudes and can be collected. This is a very crude method, which has been employed by the fisherfolk from the earliest times. The oil obtained in the above manner will be always dark and rancid. At present the process is carried on in three stages : (1) cooking the fish to soften the tissues and facilitate the removal of the oil, (2) pressing the cooked mass in order to remove oil and water, (3) separating oil from water.

The operation of cooking is performed in open iron pans which hold about half a ton of fish with sufficient water. During this process, a certain quantity of oil rises to the top and is skimmed off. This oil is very pale and clear, but during the operation only a small percentage of such very good oil is obtained. In the more modern methods the cooking is done by means of steam in an iron cylinder and the steam is admitted to the vessel by numerous inlets. In this process the cooking is carried out much more rapidly than when open vats are employed.

The fish, when sufficiently cooked, are placed in coarse bags and subjected to screw pressure. The water and oil mixture is allowed to settle, and the oil is siphoned off. The pressed cakes called "scrap" are placed on mats and allowed to dry in the sun, and subsequently sold as guano. During the season which lasts from October to February, the best quality oil varies in price from Rs. 75 to Rs. 150 a ton. It is estimated that one ton of sardine costing about Rs. 15 to Rs. 18, on being utilized for oil-production yields on an average sufficient oil which will fetch the price of fish, while the guano will bring in an average of Rs. 50 to Rs. 60. Thus, we see that the mere oil pressing industry is in itself so very profitable and at present almost all the factories for sardine oil pressing are run by European firms and the trade is practically in their hands.

The Fish-Oil industry of our country can be improved in several ways and there is adequate scope for its expansion and development. As it is, only the skimmed oil got during the cooking of fish can be considered first grade oil and the quantity of it obtained in the process is proportionately very small indeed. A greater portion of the oil that is manufactured now is second grade only. The general characteristics and constants of Malabar sardine oil indicate their suitability for the usual purposes for which other fish oils are used. Leather dressing and currying, jute batching and insecticidal soap manufacture are all uses to which sardine oil could be put. If prepared and purified carefully, sardine oil can undoubtedly be used as an excellent substitute for the costly Cod-liver oil. At present our markets are flooded with Japanese Fish Oil and several kinds of substitutes of the like in place of cod-liver oil. The latter is abnormally costly for the average Indian, and refined sardine oil which has been proved to be sufficiently wholesome and comparatively very cheap, can advantageously be used as a substitute. In its therapeutic properties, good sardine oil has been found to be quite as efficient as any of the several cod-liver oil substitutes that are making their appearance in the market to-day.

The crude second grade oil that is largely produced now can be easily refined to a first grade product. Investigations conducted on its refining have given very encouraging results. Now there is greater demand for sardine oil to be used as cod-liver oil substitute than is met by the small quantity of skimmed oil produced. Hence, refineries have to be soon started in a systematically organized manner.

The soft soap which is obtained as a by-product during refining can be sold as insecticidal soap to agriculturists and planters, and there is plenty of demand for the same.

Experiments have also opened our eyes to the fact that fish oil can be easily hardened to an odourless white product of any degree of consistence desired. The cost of hardening one ton of fish oil will not exceed Rs. 300 at present, and the hardened product even if sold as a substitute for tallow, will realize a net profit of Rs. 400 on a ton, since commercial tallow seldom sells below Rs. 700 a ton. On the other hand, high grade soaps, candles and edible articles like margarine can all be prepared out of hardened fish oil which is absolutely indistinguishable from any other hardened vegetable oil. If therefore a ghee substitute be put in the market prepared out of the cheap hardened fish oil, middle class people who cannot afford to purchase the rarely obtained pure ghee can very well go in for it since it will be extremely cheaper and better in quality than the present day obtainable loathsome market ghee.

Investigations made so far have shown that sardine oil can be successfully sulphorated also. The soluble oils obtained by neutralizing sulpho-fatty acids are used as mordants in dyeing, as colour ingredients in printing on textile fabrics, as softening agents in dressing preparations and as tool-lubricants in machine shops. Costly castor oil is used for these purposes at present, and if further investigations prove, as they are likely to do from results obtained so far, that as efficient a product could be prepared out of fish oil as from castor oil, the industry will indeed be an enormously paying one. Most fish oils readily absorb oxygen from the air, as is indicated by their high iodine value. Whether they will dry as rapidly as linseed oil and will yield sufficiently tough films to render them suitable for paint manufacture, can be said only after careful investigation. Study on this aspect of the fish-oil industry is bound to prove useful. However, large quantities of fish oil are used in admixture with linseed oil in America for manufacture of paints. It is claimed that paint made with a mixture of fish and linseed oil is more resistant to heat and is therefore suitable for use on boilers and chimneys.

After the oil is expressed from the fish, the pressed cake is dried in the sun and sold as guano. In modern factories the "scrap" is dried in hot air or steam driers. The excellent manurial value of guano is an established fact. It contains on an average 6 to 8 per cent of nitrogen and 5 to 8 per cent of phosphoric acid. Soil surveys conducted in several parts of the Presidency have indicated in a very clear manner the extreme poverty of the soils in regard to nitrogen and phosphoric acid. Attempts should therefore be immediately made to conserve all the fish manure produced in this country for our own use, instead of exporting it to foreign countries as it is being done to-day.

Large quantities of fish meal have been used with some success in other countries as a supplementary food for live-stock. The same can be tried here and will be of great use whenever scarcity of cattle food occurs. From the water in which the fish have been cooked, fish-glue can be made. The aqueous liquid is separated from the oil and clarified by the addition of a small quantity of alum. The solution is then filtered, concentrated and bleached. Fish glue is used by shoe-manufacturers, book-binders, and makers of musical instruments. The glue sells at usually £1½ to £2½ per cwt.

Thus we see there is enormous scope for developing the fish-oil industry in our country. Every year nearly 8 to 10 thousand tons of sardine oil are produced but not even a third of it is properly utilized. A great portion of the guano is exported to foreign countries. This is indeed a very unhappy state of affairs. There are several varieties of fish in Malabar Coast, Travancore, and Cochin other than sardines, which yield oil and useful likewise products. An economic survey of the varieties of such fish, their output, their oil-yielding capacity, improved and more systematic methods of catching them, and establishing small factories at various centres with up-to-date machinery to express oil and dry guano—all these require our immediate attention. By expanding the industry, making investigations on some of the aspects suggested, we shall undoubtedly be contributing a large share towards tapping one of the most important sources of India's potential wealth.

Col. the Hon. F. Vernon Willey, M.P., commenting on new Fordney Tariff Bill, which has just passed in Congress, said it was the highest tariff ever imposed by America, and it would have the effect of killing politically the Republican party. It would also, in his opinion, make it impossible for Britain to repay war debts owing to America.

Some Labour Problems and their Solution.

By S. S. Aiyar, B.A., M.S.

When the labouring classes of India are trying to assert themselves against the tyranny of capital and exploitation, it is opportune to discuss the real solution for the problem, and the lessons the industrialism of the West has for us.

The only remedy for the present labour troubles lies not in the domain of repression or Starving labour to subjection, but rather in the understanding of its physiological and the psychological basis. The present troubles are due partly to economical and partly to psychological causes,—the revolt of the dispossessed against the monopoly of the few. The poor and the weary are now struggling to get the good things on earth, which are as much their heritage as of the Pharisees. The solution sought for must be then, on the basis of human rights and principle, the basis of love, sympathy and mutual good.

While the science of machinery is being developed in all its perfection and is being specialized, not even a moment's thought is bestowed on the study of the complicated human machine. The inanimate machine is solicitously cared for, not overworked and every precaution is taken to avoid injury to it ; but the physiology and psychology of the human machine seems to be no concern of the industrialist and much less of the capitalist and the exploiter.

However much machines may be improved and increased, and man apparently replaced by them, the problems of industry are essentially the problems of human power ; and yet nobody seems to concern himself about the conservation and economy of human power. The one idea of the employer is to squeeze labour dry, and he is not concerned with the physical and mental well-being of his employees. The net result of this system is, that every succeeding generation is bound to become weaker, less enduring and less resistant to diseases, than the predecessor. Their very vitality is sapped and their efficiency as workmen much reduced. This is the most pressing problem of the day. It is this order of things that our labour is revolting against.

One important phase of the labour problems to-day is the daily hours of work. It is deplorable that the amendment of the Indian Factories Act proposes to go back to twelve-hour-day. This cannot be too strongly deprecated. All over the world, wherever labour has a real voice and is not enslaved by vigorous laws and executive enactments helping capitalists, eight-hour-day prevails, and even a six-hour-day is demanded. For women and children six-hour-day must be the rate. But in our unfortunate country, it is depressing to see that even legislation countenances a grinding ten or twelve-hour-day.

The problem of the working hours affected the very vitality of the nation. Man is not a lifeless machine and even machines do not continue to do efficient work if thus overworked. More so with man. Driven by necessity and the instinct for self-preservation, he may continue to drudge so long as there is any vitality left in him. But what is its effect ? Weak and sickly children, unhappy home, and premature oldage and death. This is the story of many an unfortunate family, be it of a low-paid clerk, of a workman or of a landless tenant. Can a land bring up a generation of happy homes and sturdy sons and daughters under such system ?

Further the needs of the mind and body—worship, love, rest, recreation, wholesome food and sanitary living—must be taken into consideration in the solution of the problem. Material well-being alone can never satisfy a man. There are other instincts beyond those of the material man that ought to be satisfied also. To satisfy any of these instincts, he must have adequate means and leisure.

Thus the question at issue is what is the minimum wage and number of hours of work per day, which is consistent with continued work day after day, efficiency and the freedom from fatigue.

Industrial fatigue is gnawing at the very root of the labouring classes and in its train follow weakness, disease and heavy mortality, not to speak of its effect on the very vitality of the people. Men who are exponents of the so called "practical experience or expediency" say that under the present system of labour-saving appliances man is less worked. But they seem to be ignorant of the psychological basis of fatigue. Under the present system which cares only for the hands and legs of the man, man is more fatigued than when he used to work with his whole being thrown to his work. Denial of the existence of a brain and a soul and the conversion of man

to an automaton following the machine only supplying the shortcomings of the machine, have been the potent causes of industrial fatigue. External pressure and loss of independent action and striving, monotonous and lifeless routine, necessity to follow the feverish speed and rythm of the machine and lastly the non-exercise of the mutual functions of the brain and mind, fatigue man in a shorter time than he would if he pursued an art or craft.

Low wages necessitating unwholesome food and crowded in sanitary living, and weakness following physiological and psychological fatigue, have been the two prime causes of labour miseries, whether it be in the tea gardens of Assam, or the cotton mills of Madras or the Zamindaries of U.P.

Work alone cannot satisfy the human being even if well fed and housed. Work, recreation, love and divine service are all needed for the needs of the human body and soul. In fact they are the needs of the fundamental instincts in man. But where is the scope for this human side of life under the hopeless system of ten or twelve-hour-day and inadequate wages ? The labourer is fatigued and ignorant as he is kept, he takes to drink in order to forget his weariness and toil, and thus sinks deeper in the mire of misery and poverty. His hard-earned money, instead of making his home and the dear souls in it happy, goes to the diabolical drink. A hardworked and drunken man is neither a good husband nor a solicitous father. A home which would otherwise be happy and cheerful, becomes a den of misery. An intemperate man, an unhappy and yet solicitous woman, and the weak, ill-fed and uneducated children within, and poverty and misery at the door,—this is the 'ideal' home, that the 'ideal' industrialism of the West has replaced the happy village homes of our country with.

If on the other hand he is given a eight-hour-day and enough leisure for the exercise of the natural human instincts, if he is paid adequately and the joys of home life placed in his reach, and if he is rid of the drink evil, the very sweetness of discharging his duties to his loving dependants keeping him off the temptations of evil, he would be a different man. He would be an asset to society, a willing and honourable worker for the well-being of the whole community.

No ! This would not appeal to the exploiter of the ignorant and downtrodden labourer. It is to his interest to keep the labourer uneducated, low and poor, thus rendering him mentally and physically incapable of self-assertion. But he forgets the very foundation of human psychology. When consciousness comes, it comes with destructive violence. That is what we are witnessing to-day in the exodus of Assam tea-garden of coolies, in the agrarian movement of U. P. and in the mill-strikes of Madras.

The industrialist always seeks the help of the engineer or the chemist to solve his problems of machinery or processes. The troubles with his employees he seeks to solve by himself or with police aid ; and his solutions are either to bully them or starve them to subjection or again to grant a few niggardly concession if they prove stronger. These methods can never solve the troubles with the human machines. The physiologist and the psychologist are the only men who can locate the seat of trouble, diagnose the malady and suggest remedies. So long as the remedies suggested by these two human sciences are not adopted, there can never be peace in the industrial or labour world.

Labour systems must be evolved on the physiological basis. The number of hours of work must be based on fatigue and physical or physiological strain of the industry. Fatigue is not due purely to physical work. There is an element of the psychological in it. The fever of speed, the unnatural monotony, the sustained efforts to keep pace with the machine, the noise and roar of machine and the repression of natural tendencies, are potent causes of fatigue. Another fruitful source of fatigue is the non-satisfaction of the natural instincts in man of home-making, of love, of social life, of mental efforts and Divine service. Man is brutalised under a system which only cares for the work of his hands and legs, and takes no account of his instincts and brain. His natural instincts not satisfied, his higher being not developed, his physical frame overworked, the labourer seeks relief in unnatural ways and instead of becoming a normal healthy member of society, drifts deeper into the labyrinth of poverty and the evils of drink and ignorance.

To overwork him is cruel. To pay him starvation wage is inhuman. But to deny the existence of a brain and a soul in him is nothing short of impiety.

Thus from whatever standpoint we may view the problem, the one solution that suggests itself is the reduction in the number of hours of work and give the labour a change to satisfy the needs of the mind of body. After all we want men and not lifeless automatons, and to preserve the human element in

man, this is absolutely necessary. Further the long hours of work and the inevitable fatigue are sapping the very vitality of the labouring classes, and making them less enduring and less resistance to sickness or diseases. It is a national problem, and the sooner the people open their eyes to the far-reaching effects of the present system, the better it will be for our country.

Prof. Frederick S. Lee of Columbia says in his "The Human Machine, etc.," as follows :— "It is pertinent to our present purpose to regard this human element, the combined body and mind of the workman, as itself a machine, ...no other factory machine approaches this human machine in its intricacy, the perfection of the correlation of its working parts, its combination of delicacy and strength, its adaptability to the work required of it. None is so essential to industry.

"*Nevertheless the present ways of handling the human machine are empirical and crude.* Experience has taught most industrial managers that they believe to be the proper way of dealing with the workers, and experience is conceived to be the best guide. The thought that the worker is a physiological machine and should be treated as such, that the problem of the worker is a physiological problem, is regarded as academic, fit for the laboratory, but not "practical" enough for the factory. *The word "practical" is one of the most alluring, most dangerous, and most misused words in the English tongue* (Italics are ours). Crimes unnumbered have been committed in its name. It is true that the science of the human machine, as employed in industrial work has not yet been developed so far as that of non-living machinery."

If this can be said of America, where labour has a deciding voice and is well paid (the wages of a professional labourer is six to eight dollars a day, which calculates at the present exchange to 24 to 32 rupees) and gets only 8 hours a day (at times 6 hours), certainly our labouring classes are worse than ill-treated.

Thus the solution rests in the study of the sciences of the human machine. This should never be made subordinate to the greed of the exploiter nor to the so-called "practical experience or expediency" of the industrialist.

In the next article I propose to treat the subject of "Women Labour."

The current number of the "Bulletin of the Imperial Institute" contains an informative article dealing with recent developments in agriculture in that part of the former German Colony of the Cameroons which is now being administered under the mandate by Great Britain. The article, which is written by Mr. J. Evans, the Government Supervisor of Plantations in the Cameroons, is of particular interest in view of the sale of the ex-enemy estates in that Province recently conducted in London by Messrs. Hampton & Sons. The German authorities, upto 1914, conducted numerous experiments, both at the Government Experiments Stations and on private estates, with a view to improving the output and quality of the staple products, such as cocoa, rubber, palm oil and various food crops, whilst new crops which deemed likely to succeed in the country were introduced. Marked results were obtained with cocoa, the Cameroons product now being of good grade and taking a high place in the world's markets. This experimental work is being continued so far as the limited staff of the present Agricultural Department admits. Under the German regime European occupation of land for planting purposes was encouraged and the Government undertook to supply and control all labour both for public works and private enterprise. This resulted in the rapid creation of a sound agricultural industry and the development of large tracts of forest land. Since the British occupation, a system of voluntary labour has been initiated and has proved satisfactory, whilst for future development Mr. Evans considers there should be no difficulty in obtaining labour at reasonable rates from the thickly populated districts of the adjoining protectorate of Nigeria. He points out that the soil in the Cameroons is very fertile, the rainfall is well distributed, whilst transport and shipping facilities are good. In addition to the crops now cultivated there are large tracts suitable for tobacco, sugar, bananas, and cocoanuts, and tea should thrive in the hills. The conditions of life generally are unrivalled in West Africa, and the country offers excellent opportunities to men of initiative, who have sufficient capital to engage in tropical agriculture.

The Right Hon'ble the Earl of Selborne, K.G., G.C.M.G., a director of Lloyd's Bank, Ltd., has been appointed to a seat on the boards of the P. & O. Banking Corporation, Ltd., in place of the late Sir Richard Vassar Vassar-Smith, Bart.

The British Industries Fair, 1923.

The ninth annual British Industries Fair will be held concurrently at the White City, Shepherd's Bush, London, and at the Castle Bromwich Aerodrome, Birmingham, from the 19th February to the 2nd March 1923. The London Fair is organized by the Department of Overseas Trade, while the Birmingham Fair is being organized as before by the Birmingham Municipality and Chamber of Commerce with the support and under the auspices of the Board of Trade. It is hoped that there will be a large attendance of buyers from India.

The measure of success of a Trade Fair is the measure of its value to the trade buyer. Since the institution of the British Industries Fair in 1915 the trade buyers visiting it have increased in number each year. No further proof is necessary that the Fair is of value to those who visit it.

The reasons for the Fair's success are not far to seek. The buyer who visits the British Industries Fair knows that he will find there goods bearing the highest possible commercial recommendation—the fact of their British origin. He knows that every article exhibited, being British, is of the finest quality and the best workmanship, and consequently will bear comparison with the exhibits at any other trade fair in the world. It is at the British Industries Fair, too, that enterprising British manufacturers first display their new models and designs for the ensuing year. In fact, the Fair marks the beginning of the year's trade cycle, and many of the visiting buyers place sufficient orders to supply their needs until the next Fair comes round.

The most important consideration for the British manufacturer to-day is the development of the Overseas Trade, and he is, therefore, paying special attention to every point which will assist him in achieving that object. He is consequently prepared to reduce his prices to the lowest possible level which is compatible with maintaining the highest standard of quality. In such respects as the special requirements of particular markets, or variations in design and manufacture to suit national or local tastes, the British manufacturer is now studying the demand of the buyer from overseas with the greatest care; while over and above all, the goods he produces still retain the outstanding feature of quality guaranteed by their British origin.

The whole Fair, both in London and in Birmingham, is under one roof, so that the visitor does not waste his time in travelling from one set of buildings to another, as is so often the case at fairs in other countries. The value to both buyers and exhibitors of such an arrangement has been proved beyond doubt, for it is possible for the buyer to give the closest scrutiny to a whole range of exhibits without any of that inconvenience and uncertainty which are inevitable when a fair is scattered throughout a town, and which are aggravated when a buyer is a stranger to the town.

The various trades at the British Industries Fair are carefully classified and grouped into sections, so that the visitor finds every Ehibitor in any particular trade within a minimum area.

He will meet not only the firms already known to him, but what is equally important to the buyer seeking new ideas, he will find firms of whom he has not yet heard. He will thus be placed in touch with sources of supply of which, but for the Fair, he would have remained in ignorance.

He will not be obliged to make a hurried inspection of the exhibits, but will have ample time to compare the products of the various exhibitors side by side.

Exhibitors at the Fair are in every case the actual makers of their exhibits, so that the buyer knows that no article shown on an Exhibitor's stand can be purchased elsewhere in the Fair—or outside it—at a lower price.

The Exhibits.

At the London Fair, the following articles will be exhibited :—

Cutlery; Silver and electro-plates; Jewellery, watches and clocks; Hard Haberdashery; Glassware of all descriptions; China earthenware and stoneware; Paper; Stationery and Stationers' sundries and office appliances; Printing; Books; Fancy goods, including tobacconists' sundries; Leather goods, including travelling requisites; Leather, Brushes and Brooms; Toys and Games; Sports goods (including sports clothing); Scientific and optical instruments; Medcal and Surgical instruments and appliances; Spectacleware and Opticians' supplies; Photographic and cinematographic apparatus and requisites; Musical instruments; Furniture of wood, cane and wicker; Bedsteads and bedding; Carpets, linoleum, etc., Basketware; Chemicals, light and heavy; Domestic Chemical products; Drugs and druggists; sundries; Perfumery;

Dyes, Foodstuffs (prepared and preserved) and beverages; Confectionary (sugar and chocolate); Tobacco, cigarettes and cigars.

The Birmingham Fair will include Exhibits from the following trades:—

Lighting plant for electricity, gas, oil, etc.; Cooking stoves and utensils, including aluminium, enamelware, etc.; Foundry appliances; General hardware, including builders' marine and household ironmongery of all descriptions; General machinery of all descriptions and small tools; Mill furnishing; India rubber goods for industrial and household purposes; Motor cycles and cycles; Accessories for motor cars, cycles and aeroplanes; weighing and measuring appliances and instruments; Sanitary appliances; Paints, colours and varnishes and painters' requisites; Railway equipment; Metals of all descriptions (excluding precious metals); Agricultural and horticultural machinery and implements; Mining, colliery and quarrying plant; Brewing and distilling plant; Metal furniture for house, shop, office, garden and camp use, including, bedsteads; Building construction; Perambulators, mailcarts and push-chairs; Saddlery and Harness; Fire-arms; Fishing rods and tackle; Tubes in copper, lead, brass, and steel and steam and pipe fittings. Architectural and ornamental metal work, including gates and fencing; Ropes of steel and hemp, cordage and string.

Facilities for Overseas Buyers.

In addition to organizing the Fair, the Department of Overseas Trade (which is a Department of His Majesty's Government), places its resources at the disposal of both buyers and sellers. A fully staffed office is opened in the Fair, where officers specially qualified to advise in connection with all the trades represented may be consulted, and where information on all matters affecting commerce throughout the world, such as tariffs, shipping, transport, etc., can be obtained.

Particular attention is paid by the Department to the material comfort and convenience of the buyer. A special club is provided for him, with reading and writing rooms, where he may carry on his correspondence, and with telephones for his use. At the Club also he may obtain the services of interpreters free of charge.

Restaurants and Tea Rooms make it unnecessary for him to leave the building for meals, and a special Post Office in the Fair building deals with his letters and telegrams.

A travel and accommodation bureau, where he may arrange any journeys he contemplates when his business at the Fair is completed, is also to be found on the Fair premises, and should he desire entertainment and amusement during the leisure hours of his visit, he will find another special bureau ready to give him advice and assistance.

It will be seen, therefore, that the British Industries Fair possesses all the qualities which assist in the making of the most cordial of relationships between the buyer and seller.

Business men will readily realize that the bringing together of the leading manufacturers in each industry at a Trade Fair stimulates competition between them so keenly that the buyer must profit. It is obvious, too, that the greater the trade gathering the easier and better will be the terms upon which the trade buyer will be able to do business.

But the keen buyer is not only interested in the price of the article he buys. He often wishes to see how it is made. At the Fair he will meet many manufacturers who will gladly welcome him to their works. There he will be able to see the goods he wants being produced, and also the facilities which exist for adapting them when necessary to the requirements of his particular market.

Enough has been said to show the buyer that, in order to keep in touch with the most important source of supply in the world, where he may be assured of obtaining at reasonable prices the newest productions and the best, it is necessary for him to visit the British Industries Fair both in London—the Mecca of every business man—and in Birmingham—the "Workshop of the world."

For the Trade only.

The British Industries Fair is not an Exhibition. It is a Trade Fair, to which admittance is restricted to trade buyers. Everybody at the Fair is there on business, and Exhibitors and buyers are consequently able to transact their affairs unhampered by crowds of sightseers.

Visitors from India.

Trade buyers from India who may wish to visit the Fair should supply as early as possible to His Majesty's Senior Trade Commissioner in India, Post Box No. 683, Calcutta, who will be glad to furnish them with further information and will supply cards of invitation.

The Madras Irrigation Bill.

By " Economicus."

The Madras Government has just now published a Bill to amend the law relating to irrigation and the levy of watercess in the Presidency to be introduced in the Local Legislative Council. A brief history of the Bill is set forth in which it is pointed out that "the advisability of legislating in order clearly to define the position of the State in respect of irrigation was recognized as early as 1856 when the Governor-in-Council directed the drafting of an Act to set out what is clearly the common law of the country, viz., that rivers and natural streams as well as springs in unoccupied or Government land belong to the State." After detailing the subsequent attempts to define this position which had to be given up or only partially adopted for one reason or another, the preamble continues that a Bill which was introduced in November 20, 1914, had to be postponed to a convenient date after the war and it is now re-introduced, advantage being taken in the meanwhile to revise it so as to clear the doubts and difficulties created by the subsequent legal decisions and to make it a comprehensive measure by including in it provisions on water-rates and the allied subject of mamul wet, on *kudimaramat* (i.e., compulsory customary labour) and on irrigation panchayats.

The Bill informs us that with the exception of Chapters VI, VII, X, XI and XII the Bill is framed generally on the model of the Bombay Irrigation Act of 1879 and the Burma Canal Act of 1905. Chapter I embodies the necessary preliminary definitions. Chapter II recognizes the paramount right of the State to control the waters of rivers, etc., enables the Local Government by notification to apply the water of any river or stream or natural collection of water for the purpose of any existing or projected irrigation or drainage work and to assume control over any work which has not been constructed or maintained by Government and prohibits private interference with the water notified or with water belonging to Government, while private rights not already appropriated can only be acquired by grant subsequent to the date of the Notification. Chapter III relates to the control and supply of water and works generally. Besides the requisite power of entry upon land or buildings for the purpose of survey, inspection, etc., the Bill provides for the recovery of the cost of repairing any damage caused to such works from the occupiers of the lands which derive benefit from that damage, if the person causing it is not identifiable, and gives power to the Government to carry out necessary repairs without delay and where the expenditure so incurred benefits an estate, it is laid down, the landholder is equitably liable to contribute to the cost of repair unless he pays a separate cess for the water-supply which he receives. Chapter IV enables the irrigation officer of his own initiative to construct new watercourses or to extend, alter and improve those already existing, simplifies the procedure prescribed for the acquisition of land and lays down that the cost incurred by the irrigation officer on the construction, extension, alteration and improvement of watercourses is recoverable from the owners or occupants of the land irrigated by water therefrom.

Chapter V treats of water cess and embodies with some exceptions the provisions of the Madras Irrigation Cess Act 1865 with subsequent amendments and a few new provisions such as the levy of enhanced assessment upon Government land classified as wet and a charge for water upon *mamul* wet land whenever the supply of water is enlarged or otherwise improved by the Government. Chapter VI deals with the execution of works on special terms such as compelling ryots to pay watercess at a specified rate whether the holders of such land choose to take water or no, for under the existing law such agreements do not run with the land and are not enforceable against transferees. Chapter VII treats of mamul wet land, i.e., land entitled to free irrigation in an estate, the new principle being based not on the quantity of water to which the landlord is entitled, but on the largest area irrigated in any one year free of charge up to the date of notification in the case of notified works and up to date of passing this Act in other cases. Chapter VIII brings together as far as possible all provisions relating to the award of compensation, the general principle being that compensation should be granted in respect of damage caused by the exercise of the powers conferred by the Bill. Chapter IX treats of obtaining labour and materials on emergencies. Chapter X takes more drastic powers to enforce *kudimaramat* to repair minor injuries to irrigation works. Chapter XI gives

a statutory basis to the constitution and powers of panchayats and boards and takes power to establish them even in non-ryotwari areas in respect of notified irrigation works; while the election of members is to be made by and from among occupiers of land with a view to exclude absentee pattadars, such as vakils, sowcars, etc., Chapter XII treats of jurisdiction and procedure in which provision is made for the establishment of a special tribunal to take the place of the ordinary Civil Courts in respect of any locality, irrigation or drainage work or works for the trial of claims other than for compensation, while the issue of an injunction by a civil court to restrain the exercise of any of the powers conferred by the Bill upon Local Government is dispensed with and special powers of arrest are given to irrigation officers in case where serious offences are committed within their view. Chapter XIV contains supplementary measures.

Such, in brief outline, are the main provisions of the Bill. There is nothing so detrimental to the spread of irrigation facilities than what a group or combination of groups of individual owners can do to thwart the common interests by their single or joint action. The Bill contains ample facilities for safeguarding the interests of the Department, but it strikes to us that some of its provisions are unsatisfactory, arbitrary and even harmful to the interests concerned

Irrigation has so far received a step-motherly treatment at the hands of the State and nowhere in the Bill can we detect a change of heart in this respect. That the irrigation works should pay their way is the fixed policy of the State. It may be excellent in principle but it works out very harsh in practice in the case of the vast body of our cultivators who are poor. The ryot already pays a considerable portion of his income as land revenue and as a matter of principle we would urge that he has a right to expect that the State diverts something of this amount to provide him with water facilities. To say that the watercess at best takes over only a small proportion of the total income that the ryot derives on account of such facilities provided by the State is to misunderstand the economic lot of our peasants, who are "uneconomic" holders, to whom the sacrifice involved in the payment of the cess is considerable, while the new benefit, if any, providing them only with a few more necessaries of life which they had not previously. It is on this ground that we object to the principle laid down in Chapter III by which the landholder is made liable to contribute to the cost of repair carried out by the Government.

More serious still is the hardship that will be caused by the power vested in the irrigation officer to construct new watercourses, etc., and to recover the cost from the owners or occupants of land irrigated by water therefrom. It is notorious that the P. W. D. has often to spend far more lavishly for the construction of such works than private bodies and to demand the cost incurred by the Department, without giving power to check the accounts or supervise the works by those who have got to pay is, to say the least, inequitable. Again, the provision in Chapter VI about free supply of water is also inequitable and likely to cause hardship to the owners of those rights.

The decision to constitute the panchayat from among the occupiers of land instead of the pattadars, though essential in zamindari tracts, is distinctly retrograde in ryotwari tracts, for in the latter the occupier is often only a tenant-at-will hired for the year who cannot have any permanent interest in the land. Though some pattadars are absentees, to penalize a whole class for the sins of a microscopic minority is unjust.

Whatever may be the excellence of the motive of the Legislature or of the superior officers of the Irrigation Department, the investment of extraordinary and arbitrary powers in the subordinate executive is dangerous. If the Government servants of all ranks are honest, conscientious and ideal servants of the people, there is perhaps no objection, but the truth is, even from Manu's time, "the servants of the king appointed to protect generally become rascals who steal the property of others" (*Manu*, VII, 123). The ordinary remedy against the arbitrary exercise of their power by the officials is to resort to the law court, but this Bill sets up a special tribunal and dispenses altogether with the law-courts. The reasons given for this procedure do not convince us, but smack very much of the attitude of an irresponsible executive chafing under the "rule of law." We are not informed about the constitution of the tribunal whether it is to consist of officials only or also non-officials. In any case this measure curtails the liberty of ryot and brings him under the complete control of the official class.

Our view therefore is that the Bill should be so amended as to remove these glaring defects.

America's New Customs Tariff.

The Bill for the revision of the United States Customs Tariff, which was introduced in the House of Representatives at the end of June, 1921, has now been passed by both Houses of Congress. It was signed by the President of the United States on 21st September last, and took effect as from midnight on the same day. The new tariff takes the place of the Tariff Act of October 3, 1913, as amended by the Emergency Tariff of May 27, 1921, and also supersedes this Emergency Tariff.

The new Act is entitled "An Act to provide revenue to regulate commerce with foreign countries, to encourage the industries of the United States, and for other purposes." The outstanding feature of the present tariff is its elasticity. The President is authorized to increase or decrease duties and to change classifications whenever necessary in order to equalize the ascertained differences in costs of production in the United States and the principal competing foreign country. No duty, however, may be increased or decreased more than 50 per cent of the duties specified in the Act or in any Amendatory Act. It is further provided that should it be found that ascertained differences in costs of production in the United States and the principal competing country cannot be equalized by modifying rates of duty within the prescribed limits, the President may substitute "American Valuation" (i.e., the American selling price of any similar competitive article made or produced in the United States) as the basis for assessing *ad valorem* duties on imports. In such event, the *ad valorem* rates levied (based upon the American selling price) are to be the rates found necessary in order to equalize the ascertained difference in costs of production; with the proviso that the rates specified for the articles concerned are not to be decreased more than 50 per cent, and are not to be increased at all. Two further general provisos should be noted: firstly, an article may not be transferred from the Free List to the Dutiable List and the form of duty may not be changed (i. e., from *ad valorem* to specific or *vice versa*); and secondly, where a maximum *ad valorem* rate is fixed for any article by the Tariff no rate determined by the President shall exceed such specified maximum.

The President is also authorized, after due investigations have been made, to take special measures by way of the imposion of additional duties or import prohibitions, in respect of (1) unfair methods of competition and unfair acts in the importation of merchandise into the United States, which threaten the stability or existence of American industry, and (2) discrimination, direct or indirect, by foreign countries, against the overseas commerce of the United States American commerce is placed whereby at a disadvantage as compared with the commerce of any foreign country.

Under the new Tariff, *ad valorem* duties will, in general, be levied on the foreign value or the export value of the goods whichever is higher. If neither the foreign value nor the export value can be ascertained, then duties are to be assessed on the value of the goods in the United States (less duty, etc.), or on the costs of production. The "American Valuation" system, under which duties would be assessed on imported products on values found by appraising officers to be the values of comparable and competitive United States products, will only be applied when the President puts into operation the elastic Tariff provisions of the Act referred to above.

A comparison of the rates of the new Tariff with the rates of the 1913 Tariff and the Emergency Tariff of 1921 shows that raw jute, shellac, raw hides and skins, and tea, which form the principal exports to the United States, are on the free list. The duty on gunny bags, however, has been raised from 10 per cent *ad valorem* to 1 cent a lb. and 10 per cent *ad valorem*. That on jute yarns and twist varies from 2½ to 11 cents a lb. and on gunny cloth is either 6/10 a cent a square yard or 3/10 a cent a lb. according to weight. The other items on which duties have been raised include indigo, manganese ore, pepper and woollen carpets.

The Liverpool Corporation Finance Committee, subject to confirmation by the City Council next week, has accepted an offer by Woolworths, the great American Bazaar firm, to take a nine hundred and ninety-nine year lease of St. Peter's Church site, Liverpool, said to be the most valuable commercial site in the provinces, at a ground rent of £12,730 for an area of a little over 5,000 square yards. Woolworths will erect on the site their largest store outside America. One-third of the building will be built by Christmas next year, and the store will be completed at the end of 1926.

Financing Education.

Edwin R. A. Seligman, Professor of Education, Columbia University, gave recently a great address on "How the Necessary Funds for Public Education May Be Provided." He said :—

"The financial embarrassments of our educational system are due to two facts : First, that with the gradual democratization of society the principle of partial support through fees has given way to the method of gratuitous service or free education supported by taxation.

"Secondly, and more important, have been the changes in the last few decades which have rendered reliance on the old general property tax unsatisfactory.

"The wealth of the country has indeed increased, but the attempt to measure wealth by the general property tax has broken down. Thus at one end needs of our educational institutions have gradually increased, and at the other end the basis of support has relatively diminished.

"There are three reasons for the failure of the property tax. First, the impossibility of reaching intangible property or property in securities and mortgages, which have greatly multiplied in recent times. An attempt has been made to remedy this defect through the development of the corporation tax. But in most States schools are still supported from the general property tax.

"Secondly, even as regards tangible property, property is continually becoming a less satisfactory evidence of ability to pay, either because of the disparity between the property and its yield or because property is no evidence of prosperity. An example of the first is the difference from year to year, under modern speculative conditions, between the value of sheep or cattle and the profits of flock-tending or cattle-raising. An example of the second is the folly of attempting to measure the prosperity of two modern merchants by comparing their relative stocks in trade, rather than the profits which are due largely to a period of turn-over and other factors.

"The third reason why property is unsatisfactory as a test of tax-paying ability is because of the existence in modern times of huge professional incomes all of which may be spent, and which would therefore be free under a property tax.

"In all the more advanced states of this country, as well as throughout Europe, property has therefore been supplanted by earnings, profits, or income, as the test of taxable ability. This means practically the development on the one hand of the personal income-tax, and, on the other hand, of the business tax, to include not only corporations but other businesses. With these additions to local real estate, where the objections to utilize property as criterion of wealth are far less, the basis of taxation can gradually be broadened.

"In this way only we tap the increasing wealth of the community and make wealth bear its proper share of the obligation to support the schools.

"Hand in hand with this, however, must go a redistribution either of educational functions or educational revenues. If it seems desirable to retain a large measure of local home rule for the schools, the redistribution must come through the revenues, that is, new state-wide income or business taxes must be apportioned to the localities, not simply according to population or wealth, but according to educational needs.

"With this reform at both ends of the process, the schools will be able to get their proper share of the increasing wealth of modern society."

Our attention is drawn to the potentialities of the Pita plant, the fibre of which is stated to be of exceptional strength and durability, equal to Manila hemp. The plant grows wild in great abundance, both in the shade of forests and in the open from sea levels to about 3,000 feet up. There are, it is stated, hundreds of square miles of Pita throughout Columbia, covering the forest floors league after league, to the exclusion of all other undergrowth. Fishing nets and lines, sewing thread and strings of musical instruments are made from it, and it is believed that it could be used for the making of cloth, and, when mercerised, as a substitute for silk. The length of the skeins as taken from the leaves is from 8 feet to 10 feet, or more than twice the length of the raw fibre extracted from the leaves of the pineapple. It is estimated that each plant will yield thirty leaves next year. From every 100 leaves 2 lbs. of dry fibre are obtained by the natives by beating them with long sticks—rough and wasteful method. Probably as much again would be obtained by a machine constructed to deal with the leaves upon a thoroughly commercial basis.

Scientific and Industrial Research.

The Committee of the Privy Council for Scientific and Industrial Research have just published their seventh annual report, with that of their Advisory Council [Cmd. 1736, H. M. Stationery Office, 3*s.* 0*d.* n.]. Seven years is long enough for an energitic administrative body to have bedded itself into the life of whatever section of the community it has to serve, and the Research Department has not only taken but has created many an opportunity of serving industry. Yet it must be admitted that it remains an exotic body to many—perhaps to the majority—of those who are actually engaged in industrial work. They know that it exists, in much the same way as they know of similar institutions in the United States and elsewhere; but they have not yet realized it as a great and growing machine, set up in our own country to make two blades of grass grow instead of one, and then to turn them into three.

Yet industry in general, and engineering industry in particular, has a great interest in the Research Department's work. A century ago the country had the same sort of leeway to make up as it has to-day, and it was successful, though after a prolonged period of industrial misery. But to-day its industries are not placed as they were then. Other countries produce more coal and iron than we do, own and use water power and liquid fuel that we cannot emulate, have thriving manufactures of commodities that a century ago they had to buy from us. For the country to survive—that is, literally, for our present population to keep alive—its resources must be turned to the best account.

Much, doubtless, could be done even with present knowledge and resources, if management and labour could and were allowed to do their best. But the utmost gain that industry can reap by producing more cheaply on its present knowledge and resources is limited, and long after the limit has been reached industry will be needing fresh knowledge and fresh resources to enable it to keep pace with the world's competition and demands. Nothing can make sure that fresh knowledge and resources will be available when they are wanted except an organized search for them in advance, such as that which the Research Department has been created to stimulate and help. Bad trade and heavy stocks, though they make the payment of premiums more burdensome than usual, do not justify the reduction of insurances, any more than bad crops justify economies in the use of fertilizers. A situation such as the present does, however, lend a special importance to results that have an immediate value; and a gratifying element of the Research Department's present report is that it contains particulars of results already obtained, as distinguished from means of obtaining them.

Fuel and Cement Kilns.

Among the savings that the Department's work has already enabled industry to make the most obvious and probably the largest are in the consumption of fuel. It was shown last year in some Newspapers that the knowledge gained of the effect of steaming in gas making, even if it was applied only to existing vertical retorts, would mean an annual saving of about the same order of magnitude as the total expense of the Research Department; and this saving would naturally not stop at the relatively small present number of vertical retorts, but would lead to and follow their extended use. The routine work, again, of the National Froude Tank is saving shipbuilders who consult it from two to ten per cent of the coal bills of their vessels, quite apart from the literally priceless services it is rendering to the Admiralty and the Air Ministry. The research into rotary kilns for cement burning, made by the British Portland Cement Association on a pound to pound grant from the Department, has given results that are already incorporated in the practice of cement works, and show a saving of four to five per cent of coal and an increased output of ten per cent of cement. One firm alone is saving £25,000 a year in its fuel bill as it was before the Armistice.

Separable results such as these, however, by no means exhaust the list of those from which actual practice has already received value. The results, for instance, of research into non-ferrous alloys, some of which are included in the year under notice, have an industrial value as sure as it is indeterminate.

Vegetable Products.

Most engineering manufacture is done for other industries, and the engineering trades are interested accordingly in whatever progress other industries may make. Sometimes they are concerned to supply the mechanical means by which the progress may be made, but

always they share the benefit of the customer industry's growth.

Two or three examples may be quoted of progress actually realized from researches into the vegetable kingdom industries. As an outcome of work conducted by the British Cotton Industry Research Association with the aid of its grant from the Research Department a method and an instrument have been devised for measuring the regularity of yarns up to 200 count, from which a profound effect is expected in producing the finished product. The Linen Industry Research Association, again, by a prolonged study, made with similar help, of the so called ultimate fibres of flax, hemp, and ramie, have found means of distinguishing flax and hemp fibres at all stages of manufacture, a matter of obvious importance of maintaining the purity of linen goods. A machine has also been devised for taking autographic stress-strain records of yarns, by the help of which a valuable study has been made of the effect of various factors, such as weight, twist, boiling, blending and sizing on the behaviour of yarn. Research into the selective breeding of flax has led to the development of a pedigree strain, giving a much increased yield of fibre per acre.

Similarly the shipping industry is interested in the result of the Food Investigation Board's research into the fundamental physiology of living and dead foodstuffs, as a result of which it has been possible to diagnose a disease of apples in transit previously attributed in error to insects in the orchards, and to prescribe a treatment making the recurrence of the disease impossible. The apples had, in fact, been "suffocated" by their own expired carbonic acid; in one case a cargo lost £30,000 to £50,000 in value from this cause.

Some Individual Details.

Results have been obtained not only in fundamental industries, but in the manufacture of details ancillary to their work.

It may be remembered, for example, that in last year's Report the Oxygen Research Committee was said to have evolved a method for evacuating vacuum vessels in about a fourth the time previously necessary, and with a saving of over 90 per cent of the actual pumping, by which at the same time the vacuum was improved. A plant was set up for evacuating such vessels in quantity, which it was estimated would reduce the cost from about £3 each to about 7*s*. This plant has been constantly in operation during the year, and the estimated saving has been made.

Another similar example is the elaboration of the Sira abrasive and rouge by the British Scientific Instrument Research Association, among a number of other already fruitful results. Here, as with the apples, the research was begun by an investigation of fundamental scientific principles involved in preparing and using abrasives and polishing powders. The data so obtained remained as the necessary foundation of future practice; but in the meantime the Sira products have yielded definite results in the manufacture of optical glass, the abrasive being also under large-scale trial in other industries in which it promises to have economic value. In optical glass-making the single abrasive applied in two or three machine grindings has replaced three or four machine grindings with separate grades of emery (each of which has to be removed before the next is applied), and a final hand smoothing with the finest grade; the whole process taking only a third of the time previously required. The Sira rouge, moreover, polishes more quickly, with less risk of "sleeks" and with a finer finish; and surfaces ground with the Sira abrasive are polished in not more and usually less than two-thirds of the time required by the previous processes. As a result many operations can be done in the normal day which could not be left over till the next day for fear of the surfaces losing truth, and thus previously had to be done on overtime.

Savings in Research.

The savings which the Research Department have enabled other bodies to realize in the cost of their own research must also be credited immediately to the Department.

An example on perhaps a relatively small scale, but with a wide application, is the research made at the British Museum on the discovery of sound scientific methods for preserving and restoring museum objects. The effect of this work has been to provide and to test thoroughly a series of methods, the number of which will of course increase as the work continues, which not only show the way to preserve priceless objects in the British Museum itself, but can be applied in museum work-rooms throughout the kingdom. Wooden carvings, for instance, that had lain for some thousands of years under a deposit of guano and had become soft, spongy, and rotten, were freed from the cause of decay and stiffened, so that they are now preserved from further

injury, and can be handled. Copper wares that had become mere shells of carbonates and oxychlorides surrounding a core of oxides have had their shells reduced again to metal, as it is hoped that the cores will also be. Prints and paper, again, have been freed from discolouration.

The savings in prevention of overlapping of work, and the gain in fertility, that are resulting from the Department's co-ordination arrangements are seen in the Co-ordinating Research Boards and the Committees set up for the Researches in and for the fighting services, dealing with chemistry, fabrics, explosives, engineering, and radio communication. These arrangements are being continued between the Department's Committees, and not only other Government Committees, but also Research Associations, and again between Research Associations themselves. The Cast Iron and Refractories Associations, for instance, are jointly investigating sands and refractories; the Refractories and the Glass Associations are making a separate joint study of refractories used in glassmaking, the Motor and Allied Manufacturers and Cast Iron Associations are dealing with the casting of cylinders, while die castings are being studied jointly by the Motor and Allied Manufacturers, Non-Ferrous Metals, Scientific Instrument, and Electrical and Allied Industries Associations. These investigations typify, says the "Times", very many that have a common interest for several trades, and the mere enumeration of these industries suggests how great must be the saving of overlapping work and the increase of efficiency in researches so co-ordinated.

The British Dyestuffs Position.

I have just returned from Manchester and Huddersfield where several of the largest British Dyestuffs factories are situated and which I was allowed to inspect at my leisure, says Mr. G. Basil Barham, C.E., in the Karachi *Daily Gazette*. All were magnificently equipped with chemical engineering plant and a feature in connection with this which was common to all the works was the immense amount of spare plant of every kind which was held in special storehouses ready for replacing at a moment's notice any portion of the running machinery which might be temporarily disabled or put out of use for cleaning and repair.

One of these factories which I believe to be the largest in England, although as to that I am not sure, occupies over 300 acres of ground, counting in all its many departments. This factory prides itself on its staff and not only employs thousands of workpeople but has several hundreds of highly trained chemists who have won the usual diplomas. In addition, attached to it are a large number of University Professors who occupy their time in research work in organic chemistry. I do not know of any industrial works in Great Britain which is spending such vast sums in training up young men as chemists or which has so large a number of students going through its various training schools and through its works.

Some idea of the size of this factory may be gathered when I say that in addition to some dozens of miles of light railways it has 15 miles of ordinary gauge railway, connected to a main line service, running through its works. It owns several ordinary locomotives in addition to a number of special locomotives which are fireless but take in high pressure steam at several filling stations throughout the works. This is to avoid any risk of fire in what may be termed the danger zone.

The factory is self-contained in that it is independent of any outside source of supply except that of the usual raw materials. Every intermediate is manufactured on the premises and although very little is allowed to become public as to its actual output I gathered during my visit that this one factory alone was capable, without any extension and by mere using its present plant and staff of turning out over 30,000 tons of dyestuffs per annum. It is not turning out that amount at present merely because it is considered advisable to devote a very large amount of the space, plant and staff to research and experimental work. I obtained the impression that a very large amount of experimental work in connection with actual colour using as well as with colour making was being carried out on the premises and a large staff of dyers was employed who had no connection with the colour making work. These men were constantly employed in experimental dyeing although the works do not engage in colour using in any commercial sense of the word. I learned that all their activities in this direction were devoted, free of all charge, to the services of the British textile trades.

Inventions that astonish even Edison.

Even Thomas Edison, the "Wizard of Electricity" threw up his hands in amazement when on the occasion of his recent visit he was shown some of the new inventions being perfected at the General Electric Company in Schenectady, New York. Some forty years ago in this very same concern the inventor was himself at work on such devices as the electric light bulb, which first made him famous.

The company barred some of its most interesting secrets on this occasion, and performed for Mr. Edison demonstrations of apparatus which, while still in an experimental stage, is of so distinctly revolutionary a nature that the General Electric experts decline even to speculate as to what its perfection may mean. The electron tube, for instance, used in sound reproduction, may contain within it a force sufficient to take the place of all other motive powers.

The two principal devices shown to outsiders for the first time during the inventor's visit were the pallo-photo phone, and the mercury boiler. The pallo-photo is a contrivance for recording sound upon a photographic film so that the sound may be reproduced in ordinary telephones, loud speakers and in other ways. Mr. Edison saw it work. He saw two ordinary drums full of film, as in a motion picture projecting machine, with a horn near by. A man speaks into the horn, his voice is recorded, not by a stylus on a wax plate as in a phonograph but by a dancing beam of light reflected by a mirror on the photographic film. The film is developed, run through the machine again and out comes the voice, perfect, with those delicate overtones which, up to the present, no mechanism has been able to record, and without the slightest "scratch".

The inventor and the company declined to speculate on the future of the device. But as a motion picture and the voice of the actor or actors can be photographed on the same strip of film simultaneously there may possibly come of it the much sought after "talking movie" in which voice and movement are perfectly synchronized. Or the film may be used in the future as an inexpensive substitute for the gathering of expensive artists at the various broadcasting stations.

The singer whose voice is transferred to film could, it is suggested, "sing" from broadcasting stations all over the world to which duplicates of the original roll might be sent. Or possibly the device could be used for sending photographs by wireless. There is no theoretical obstacle.

The mercury boiler that Edison saw may eventually, it would seem, be the means of saving at least a third of the energy of coal now wasted in combustion. Where 1,000 tons of coal are now needed to produce a given amount of energy, between 600 and 700 tons may suffice if this device is used. In simple terms, the boiler consists of two sets of tubes and two turbines. One set of tubes contains mercury, the other water. Heat is applied to the mercury. Its boiling point is so high that it can absorb a much greater amount of heat than water. The vapourized mercury under compression turns one of the turbines. Emerging into a condenser, it passes on its surplus heat to the water, and the steam thus generated turns the other turbine.

Mr. Edison also saw a small induction furnace, a coil which turns a steel file red hot in a few seconds.

Reviewing the contributions made to science by the inventor during his long life-time, the speaker at the luncheon in Mr. Edison's honour made the comment that after the lapse of forty years Mr. Edison's early achievements appeared almost miraculous. "His system of distribution of electrical energy on the multiple or parallel plan," the speaker went on, "has survived and is the only method by which an unlimited amount of electrical energy can be generated and distributed over an unlimited area in a practical and commercial manner. The incandescent lamp is substantially as Edison gave it to us forty-four years ago. The vacuum tube which Edison first made a practical device in the incandescent lamp is, in the hands of others, destined to revolutionize our present methods of generation, transmission, and utilization of electricity, and will make possible engineering feats that have not, heretofore, been even dreamed of."

A sugar refinery in France is understood to have undertaken to manufacture ammonia from the nitrogen found in molasses and vinasse which are recovered in the process of refining sugar. It is estimated that if all the molasses produced in France were treated by this process about 17,000 tons of ammonium sulphate would be produced yearly.

The Teaching of Elementary Economics.

A recent number of the *Journal of the Indian Economic Society* contains an account of the discussions that took place at a Round Table Conference, on the Teaching of Elementary Economics, which was held under the auspices of the American Economic Association with Mr. E. L. Bogart in the chair. Mr. H. L. Lutz, Oberlin, Mr. H. T. Collins of the University of Pennsylvania, Mr. C. O. Ruggles of Ohio State University, and Professor E. E. Day of Harward are some of the eminent economists who spoke on this subject at this Conference.

The points on which emphasis was laid at this Conference are the following :—

(1) The elementary economics course must be concrete and descriptive to give the student some familiarity with our economic institutions as well as with the terms and concepts of the science. Such a text-book as Taussig's Principles, Mr. H. L. Lutz does not recommend for the beginners.

(2) The student must be taught the method and character of economic reasoning.

(3) Mr. Collins suggests the conduction of lecture and recitation side by side. He insists on the text-books being changed every year and on the dealing of one subject every week both by lecture and recitation method.

(4) Mr. Ruggles says that some study of elementary economics should be introduced into the secondary schools and that the lecture method is found by experience to be defective with very large classes.

(5) Professor Day says that, from his own experience in Harward University, the progress made by the second year college students is more satisfactory than that of the first year students. He advocates the case or problem method in the teaching of economics—a concrete case being made the basis of discussion of important economic factors.

The deliberations of this Round Table Conference will be interesting and suggestive to people connected with the Economics branch in the Indian Universities. Economics is one of the subjects whose study begins in the B.A. class in the Indian Universities. The study of this subject may be begun even earlier in the Intermediate course with advantage. The method of teaching economics in India is generally the lecture method. Professor Ray's case or problem method may also be introduced in India.

Utilizations of Oscillatory Power.

Heinrich Schieferstein, an engineer in the employ of the Huth Wireless Telegraph Company held, reports the European Press, Munich, an interesting demonstration recently before representatives of German and foreign diplomatic and commercial circles. The demonstrator claimed that he had discovered the method of applying the principles of wireless telegraphy to mechanics.

Every pianist knows that a vase or any other object in the room will suddenly sound when a certain note is played. This is explained by reaction to vibration, and the present discovery is the utilization of the power of vibration which is possessed by every object. Hitherto, this power has been recognised, but it has been regarded as a danger, as is shown for instance, in the precautions taken by army companies marching over a bridge. In the construction of all machinery, allowance has always had to be made for this oscillatory power, which retarded speed and caused irregularity of action.

By a system of loose coupling Schieferstein showed that, in the case of heavy machinery, motor engines, weaving-machines, etc., oscillatory reaction could be greatly reduced. He also showed how the pendulum of a clock can be used to keep the works wound up, so that the main-spring can be dispensed with. There seems no reason why the cheapest and loudest alarum clocks should not become perfect and noiseless time-keepers.

Interesting for the zoologist were the lecturer's observations on the flight of birds. According to him, birds flying in a line exercise a perfect system of reciprocal oscillation, so that the weaker are kept in line by the greater vibration caused by the flight of the stronger.

The Oscillatory-Power Corporation, a German-American society with its headquarters in Charlottenburg intend to apply Schieferstein's discovery to various branches of industry, and experts all over Germany look for good results.

The Workmen's Compensation Bill.

The principle that workmen should receive compensation for injuries suffered from accidents arising out of and in the course of their employment is now very generally accepted in European countries. The Government of India are intending to apply at first on a modest scale the same principle to India. It is proposed that the Bill now being considered shall come into operation on the 1st July 1924.

Who will benefit from the Bill ?

The general classes included are :—

1. Workers in factories which use mechanical power and which employ not less than 20 persons.
2. Workers in mines.
3. Railway and Tramway workmen.
4. Certain classes of workers on ships.
5. The great majority of dock labourers.
6. Certain classes of persons employed in the building trades.
7. Telegraph and Telephone linesmen.
8. Underground sewage workers.
9. Members of fire-brigades.

But persons who receive more than Rs. 300 unless they are manual labourers or railway workers, are not eligible for compensation. Further, if workmen are drunk or disobey orders or remove safety devices they will not receive compensation as a rule for accidents which may result in consequence.

What is the Compensation ?

In the case of fatal accidents, compensation for adults is 30 months of the deceased workman's wages subject to a maximum of Rs. 2,500. In the case of a minor, the compensation is Rs. 50 which is intended only to cover funeral expenses. Where the workman suffers permanent injuries that do not result in death compensation is on a different scale. For injuries which incapacitate a man completely for life, such as loss of eye-sight, the compensation payable to an adult is 42 months of his wages, and to a minor 84 months. If the injuries do not completely disable the workman, the compensation is to be based on loss of earning capacity.

All these payments take the form of lump sums and will normally be paid by the employer. The case of temporary injuries is different. The rule here is that adults are to receive half wages and minors $\frac{2}{3}$ wages, subject in each case to a maximum rate of Rs. 30 a month. Payments are to be made twice monthly, while disablement lasts.

The waiting period before compensation comes into operation is fixed at 10 days. This means that a workman will get no compensation unless he is disabled for more than 10 days. If his disablement lasts beyond that period, he will get no compensation for the first ten days.

Compensation is also payable in some cases for diseases which the workman may contract. Three such diseases—anthrax, lead-poisoning and phosphorous poisoning are specified in the Bill and special classes of workmen liable to contract these diseases are named. If a workman in one of the specified classes contracts one of the scheduled diseases he will be entitled to compensation.

How Compensation can be had ?

The Bill provides for administration and the settlement of disputes by Special Commissioners. This is designed to avoid legal intricacies and the delay of the ordinary Civil Courts. From the decision of the Commissioner an appeal will only lie to the High Court on questions of law ; and then only if the amount in dispute is at least Rs. 300. Further, if the parties agree beforehand to abide by the decision of the Commissioner, his decision will be final. Neither workman nor employer can apply to the Commissioner until an endeavour has been made to settle the dispute by agreement. The normal procedure will be somewhat as follows :—The injured workman or his dependants will serve a notice of the accident within 72 hours of its occurrence on the employer or on his manager. The employer has then the right to have the workman examined by a qualified medical man and if the workman is temporarily injured, the employer has a week in which to have the examination made before any compensation is payable. If the workman refuses to submit to a medical examination, his right to compensation is suspended. The employer can also offer to the workman free medical attendance by a qualified practitioner ; and if the workman refuses to avail himself of this offer without reasonable excuse, the employer will not be liable to pay compensation for any aggravation of the injuries which may result from this neglect. On the other hand, if an employer does not offer free medical attendance he will be liable for all the direct results of the injury even though some of these could have been prevented by

skilled treatment. When the employer has ascertained the effect of the injuries he will calculate what compensation is payable. If the payment takes the form of a lump sum and is accepted by the workman, the agreement reached can be registered in the Commissioner's office. If the workman does not accept the employer's offer the matter is referred to the Commissioner. In the case of fatal accidents the compensation payable must be deposited by the employer with the Commissioner. It is then the Commissioner's duty to consider the claims of the workman's dependants.

Broadcasting Wireless—Its Use in the Home.

The *Observer* dealing with the possibilities of the development of wireless and its use in the home, states :—Within a few weeks the public will be able to instal a wireless telephone in the home and to listen every evening to whatever programme has been arranged for dissemination from the broadcasting station. The new system, of which an outline has been given by the Postmaster-General, is only intended for receiving messages, and not for transmission. The Post Office grants licenses for transmitting wireless messages only to a certain number of amateurs engaged in scientific investigation. The wireless telephone is primarily for those who wish to listen to concerts, lectures, or speeches in the comfort of their own homes, and the hours of reception have been fixed at first from 5 P.M. to 11 P.M., except Sundays, when there will be no limit. Later on, however, as the system develops, there is little doubt the wireless telephone will be used largely also for business purposes. Already the farmers in the Malton district of Yorkshire have expressed a desire to have a broadcasting station established there, so that they may receive weather forecasts and crop reports. The possibilities, in fact, are limitless, and the promoters are sanguine of equalling if no surpassing the service in America, where they are "broadcasting" all day long. The owners of a wireless telephone there know what they are to receive from the programme announced each day in the Press, and a similar method will probably be followed here. In America they start the day with an item of news. Then the Stock Exchange quotations are sent out, to be followed perhaps by a lecture to the housewife on cookery. Next comes over the weather forecast for the farmers. The Health Minister sends out a lecture on hygiene. There are other lecturers during the day, with concerts in the afternoon and evening, and a popular item with the younger members of the household is the nightly story told by a well-known story-teller. Punctually at 10 P.M., the time-signal comes, over the wire, so that everyone can set the clock.

At first only a skeleton programme will be attempted here.

The Marconiphone is as simple to use as a gramophone, and just as portable. It consists of a wooden cabinet, the smallest measuring about 12 inches long by 8 inches high and 6 inches wide. On the top is the valve resembling an ordinary electric lamp ; and at the back of the cabinet are two slots, one being for the insertion of the aerial and the other for the telephone connection, both having to be inserted before the reception of messages. The cabinet can, of course, be carried to any room or part of a house. All the recipient of a message has to do is to connect the length of aerial wire with the cabinet, pass it through the window, and hook the other extremity (on which is fixed an insulator) to the branch of a tree or a clothesprop. He connects the telephone, places the headpiece round his head, and listens to whatever may be the items sent out from the broadcasting station. It is estimated that the cost for a Marconiphone for one person to listen at a time will be about £6 ; but if a "loud speaker," resembling a gramophone torn, is desired, so that a roomful of people may all hear, the cost would be more. A two-valve instrument will give better results than a single valve, and additional expense may also be incurred by celebration of design. Having purchased the Marconiphone, the only further expense will be for renewals, which will depend upon the extent to which the instrument is used and the care bestowed upon it.

Directly the Postmaster-General has announced that licenses are obtainable, any member of the public can apply at a post office for permission to have a receiving instrument at his house, and pay ten shillings. Having secured a licence, he should then write to Marconi House, stating his requirements, and he will be advised as to what instrument will best suit him and the cost.

Canadian Trade and Finance.

Montreal, November 1st, 1922.—One of the most encouraging features of the commercial situation in Canada at present, is the substantial improvement which has been taking place in the foreign trade of the country. The present period is one in which the leading commercial nations of the world are competing with one another in an effort to widen their markets, and to build up the foundations of their future trade. In this keen international competition, Canada has gradually improved her trade position, until, in the month of August, she surpassed even the Mother Country in trade with the United States. Not only were more Canadian products sold in the United States during the month than those of any other country, but, in addition, Canada was the largest buyer of American goods. The total volume of Canadian-American trade was two million dollars in excess of the trade between Great Britain and the United States, as the following table indicates :—

Canadian trade with the United States—	
August, 1922.	
Exports	$56,000,000
Imports	32,000,000
	$88,000,000
British trade with the United States.—	
Exports	$55,000,000
Imports	31,000,000
	$86,000,000

The above figures are the more encouraging when one remembers that the improvement in trade has taken place in spite of the increase in the United-States tariff. There were many predictions that the new tariff would greatly decrease Canadian exports to the United States. On the other hand, in spite of this artificial trade restriction, and in spite of the recovery of the Canadian dollar, Canada increased her sales to the United States by $8,000,000 over those of August 1921. At the same time, the total value of Canadian imports from the United States was $12,000,000 less than for the corresponding month last year. Nor is the increase in Canadian trade with the United States made at the expense of her trade with other countries. Statistics published by the Department of Trade and Commerce show that there has been a marked increase, during recent months, in the total Canadian foreign trade. The following table indicates the movement for the past five months :—

Total Canadian foreign trade.—	
April, 1922	$ 80,381,211
May ,, ...	136,580,094
June ,, ...	133,429,292
July ,, ...	132,577,647
August ,, ...	140,740,949

Another encouraging feature of the trade situation is the fact that Canada is consistently maintaining a favourable balance. Two years ago the balance was increasingly against this country during the spring and summer months. Last year, to a lesser degree, the same situation existed. This year, however, a favourable balance has been maintained for a period of five months, due chiefly to the increase in exports of lumber and paper products, and in view of the large crop, there is a strong probability that the balance will continue to be favourable for some time.

Mineral Production in Canada.

During the past two years, the mineral output of the Dominion was valued at $2.374 millions and $1.723 millions respectively. Towards these totals, the largest contribution was made by the gold and silver mines of Northern Ontario, which, during recent months, have shown greatly increased activity. It would be easy to under-estimate the importance of these rapidly developing industries, on the commercial life of the province, and, in fact, of the entire country. During the month of August, gold from the Kirkland and Porcupine districts amounted in value to approximately $1,820,000. The production of gold for the first half of 1922 shows a large increase over that of any similar period, and gives promise of an output exceeding $20,000,000 in value, for the year, in comparison with $14,624,085 for 1921. The volume of gold mined in the two six-month periods compares as follows:—

1921 (1st 6 months) ..	393,391 ozs.
1922 ,, ...	585,833 ,,

The production of silver also has shown a very rapid development during recent months, in the mining districts of Northern Ontario. During August, 850,000 ounces were produced in the Cobalt, South Lorraine, and Gowganda districts. The production of silver for the first half of the year shows an increase in volume of 720,000 ounces, over the same period a year ago. The total output of silver in

Canada last year amounted in value to more than $9,000,000 in spite of the fact that the price, throughout the year, was less than two-thirds of that prevailing during the previous year.

Certain of the mineral products of Canada are of special interest, in view of the large percentage of the world's supply of raw material which Canada possesses. Nickel and asbestos are virtually Canadian monopolies. Of the former, Ontario mines produce more than 80 per cent of the world's output, and, of the latter, the Province of Quebec produces the same percentage of the world's total. During the ten-year period ending with 1920, the annual production of nickel in Canada was 60,812,038 pounds.

American Bankers Convention.

During the first week of October, the members of the American Bankers Association met in New York City to discuss questions of banking policy. Such matters, however, did not receive the entire attention of the meeting. Looking away from affairs of purely domestic interest, the Convention took a broader view, and turned its attention to affairs of world-wide importance, namely, to the questions of foreign policy, and of international debts. Apparently with complete unanimity, the delegates took the stand that it was time for America to abandon her post-armistice policy of isolation, and to undertake her just share in the solution of the European problems. The view seemed general also, that it was time to come down to hard facts in regard to the debts—to learn how much could be reasonably expected, and to extend, curtail or even cancel, certain of the debts, where it was deemed necessary or advisable. The feeling of the Convention appears to have been accurately voiced in the address of the President of the Association, Mr. Thomas B. McAdams, who said in part—

"The armistice was signed almost four years ago, and yet we find ourselves facing world problems crying out for solution, while we stand idly by neither offering assistance nor making a suggestion helpful in bringing order out of chaos..... Has not the time arrived for the United States to cast aside her policy of aloofness and throw herself wholeheartedly into the situation, that a cure for social disorder and financial demoralization may be speedily devised? We may picture for ourselves all the prosperity which is in our grasp to-day so far as our internal situation is concerned, but we must realize there can be no permanency in it unless a sound foundation can be laid upon which the structure of future international commercial relations may be safely built.

".....the United States, as well as the other participants, must be prepared to readjust reparations and inter-allied debts upon a basis which fully recognizes the rights of the creditor and will relieve the immediate burden of the debtor countries to such degrees as will enable them ultimately to discharge their obligations.

"Some debts must be extended for long periods, others cancelled or curtailed, but in any readjustment consideration must be given to the advantages accruing to some of the allies through the provisions of the Versailles Treaty.

"Complicated as the situation appears, it should be possible, through making a fair analysis of assets and liabilities to prepare a readjusted balance sheet which will prove acceptable and furnish a proper starting point for the reawakening of international trade, the placing of the currencies of the world upon a gold basis."

Following discussions of the possible disposal of international obligations from the American view-point, a British opinion was presented by the Right Honourable Reginald McKenna, formerly Chancellor of the British Exchequer, and now Chairman of the London Joint City and Midland Bank, Ltd. Mr. McKenna said in part:

"I believe I am justified in asking you to treat England's debt to the United States as certain to be provided for, and if this be conceded we shall be free to consider the question of the remaining international debts as one in which America and England are equally concerned and in which both have the same interest as creditors.

"First let us look at the magnitude of these international debts. The greatest of all is that of Germany for reparation—a debt of which the United States declined to receive any share. The amount was not defined in the Treaty of Versailles, but subsequently by the London Ultimatum it was put at 32 billion dollars, at which amount it stands nominally to-day."

"Of the remaining debts the liability of France to the United States and Great Britain is 6½ billion dollars, and of Italy to the same two countries 4½ billion. Russia owes to these countries 3½ billion and a further one billion to France. These are the principal debts; the

others are all comparatively small in amount." In discussing the possibility of Germany to pay reparations, Mr. McKenna pointed out that the possible sources of the payment of such obligations include an exportable surplus in trade, and such items as interest received from foreign investments and payment for external services such as shipping. It was pointed out that, while before the war, Germany possessed a very large exportable surplus, most of her foreign investments have now disappeared; that her shipping has been largely confiscated and that she has been deprived of some of her most productive areas. It was shown also that, even if she could produce sufficient goods to maintain a large favourable balance, no market existed for her products to the extent required. In view of these circumstances, Mr. McKenna recommended a revision of the London Ultimatum.

In dealing with the other obligations of the European powers, Mr. McKenna said :—

"The inevitable conclusion is that these international debts are far too great for the capacity of any of the debtor countries except England. She alone in her accumulated foreign investments has adequate resources with which to discharge her liability to the United States. Of the others, France has the greatest resources, but they are, I believe, quite insufficient to meet her obligations. The whole subject requires a rational reconsideration by the creditors, who must keep steadily in view the immediate effect of the payment of these debts on the general trade of the world.

"The creditor countries will obtain greater advantage from trade prosperity, which will insure future employment in their factories and workshops, than they can ever receive from the precarious payment of these debts. In the last two years we have had experience of the effect upon foreign trade of tumbling exchanges and broken down credit, and though the consequences may be more serious in England than in the United States, where foreign trade is comparatively only a small part of the total trade, they are still grave enough in the latter country also to warrant the fullest and most careful consideration."

G.I.P. Railway Re-organization.

From November 1, an important change has been made in the organization of the Great Indian Peninsula Railway. The traffic and locomotive departments will be replaced by :— (a) A transportation department which will be responsible for the running of trains and the carriage of traffic of all kinds having under its control all engines except those undergoing heavy repairs. (b) A commercial department which will be responsible for securing, charging for, loading, despatching, unloading and delivering goods and parcels and securing and charging for passengers. (c) A mechanical department which will be responsible for the design, construction and heavy repairs of engines, the provision of electricity and the provision of structural alteration and heavy repairs of pumping plant.

The appointments of general traffic manager and locomotive superintendent will be abolished and the heads of the new departments will be known as chief transportation superintendent, chief traffic manager, and chief mechanical engineer. In the past the general traffic manager and its officers have been responsible for both commercial and transportation duties. The chief traffic manager and the officers attached to his department will be relieved of all transportation duties and will be able to devote themselves entirely to keeping in close touch with the public acting in a sense as its special advocates with regard to the supply of wagons, provision of facilities, prompt settlement of claims and granting of refunds.

The chief transportation superintendent, as stated above, will be responsible for the moving of traffic of all descriptions, and will have under his direct control the means of moving it, namely, engine power—an extremely important matter. Passenger arrangements generally will be in his hand ; but passenger rates, fares and refunds will be arranged by the commercial department. A rearrangement of officers up-country is necessitated. Under the old arrangements the district traffic superintendents dealt with both transportation and commercial work, but from November 1 each department is being separately represented. The advertisements appearing in the public press show the officers of the two departments, their headquarters and the sections of the line of which they are in charge. The re-organization will result in its being possible to give more attention to public requirements and in the operation of the railway being more economical.

Economics in the West.

German Reparations.

London, 1st November.—It is so generally admitted in this country that the creditors of Germany have small prospect of exacting anything in the nature of substantial indemnity that the controversy between the allied delegates of the Reparation Commission has excited comparatively little attention here. So much has been promised and so little has been received, the fluctuations in the mark exchange have been so violent and so frequent that the average British taxpayer has grown tired of reading that 40 marks exchanged last week for one penny and that to-day the same number of marks are worth only one halfpenny. Unless actively engaged in transactions involving the exchange of British and German currencies he has, perhaps naturally, long since abandoned interest in foreign exchange and reparations and is more concerned with personal and domestic problems more obviously touching his own immediate future. The fact that German finance is in danger of complete collapse and that the mark is following rapidly the course of the Austrian krone and the Russian rouble is, however, a matter of vital importance to commercial and industrial interests in this country, and consequently to all of us. The breakdown of Germany, involving her elimination even temporarily as a factor in world trade, would be paralysing in its effect, and we in this country would suffer in common with other trading nations.

The economic lives of two great trading nations are mutually dependent. Before the war Germany was our great competitor in foreign trade. She had built up rapidly an export trade very similar in many essentials to our own, and both countries by the investment of surplus income assisted in the development of overseas markets. But if the two countries were great trade rivals they were also very large mutual customers, and each gained from the other's prosperity. Then the war came and with it a suspension of ordinary trading conditions. The re-establishment of peace found both countries impoverished. Much real wealth had been squandered; debts, internal and external, had accumulated; currencies were inflated; and overseas markets, so assiduously cultivated in years of peace, were neglected. The Treaty of Versailles effectually prevented the straightening-out process which might otherwise have taken place. This country was the first to perceive not only that the reparation demands were beyond Germany's capacity to pay but that, if within her capacity, they could only be satisfied at the expense of other manufacturing countries because the world's demand for manufactured goods could not be increased beyond a certain point. But, unfortunately, there has been no general realization of this truth, and in consequence economic and financial conditions in Central and Eastern Europe have become chaotic. Just as we shared in the general prosperity before the war, so now we suffer in the general adversity. We have a mass of unemployment, and unemployment is bound to increase still more if Germany breaks down, and the world's power of production is further reduced.

The Reparation Commission is now in Berlin considering what measures can be adopted to save the situation. Sir John Bradbury, the British delegate, has formulated a scheme which in his opinion may restore confidence, prevent a further collapse in the mark, and ultimately put Germany in the position of being able to pay something in reparation. Briefly his proposals are :—

(1) Suspension of all cash payments falling due between January 1, 1923, and December 31, 1924, with discretion to extend the period for a further two years.

(2) German Treasury Five-Year Bonds for an equivalent amount to be handed to creditor Governments, and sold by them under guarantee to their own nationals.

(3) To fix a rate of exchange as between gold and paper marks.

(4) To prohibit the issue of additional Reichsbank notes except against gold, approved foreign currencies, and commercial bills.

(5) To prohibit further issues of legal tender otherwise than by the Reichsbank.

(6) To reconstruct the Reparation Commission and transfer it to Berlin with a view to intimate co-operation with the German Government.

Reparation payments by means of deliveries in kind, services rendered, etc., would continue to be made but is it proposed that in return therefor Germany should obtain from each recipient Government the latter's guarantee to German Treasury Bonds with the right to negotiate them. The whole question of the

aggregate liabilities of Germany under the peace Treaty should, it is contemplated, come up for revision not later than July 1, 1926.

To what extent the foregoing proposals will be incorporated in the Commission's final arrangement is not yet known, but the French delegates have submitted an alternative plan demanding guarantees and wide powers of control and supervision over Germany's finances. In brief the French requirements are :—

(1) The control of the public finances of Germany by a Committee of Guarantees, domiciled in Berlin.

(2) Budgetary equilibrium and cessation of inflation.

(3) Control of Reichsbank.

(4) Prohibition of State financing through the Reichsbank.

(5) The issue of gold Treasury Bonds abroad with the two-fold object of strengthening the Reichsbank reserve and of making reparation payments.

(6) The continuance of an expert tax of at least 25 per cent, payable in gold or sound foreign currencies, the proceeds to be paid into a special account in the name of the Committee of Guarantees, but to be at the disposal of the German Government in the discretion of the Reparations Commission.

Railway and Public Health.

The Conference of Sanitary Commissioners that was held at Simla in May 1919 recommended that, owing to the danger of the spread of infectious diseases, such as cholera and plague, by railways, an investigation into the Sanitary administration of railways and the relation of the railway administration with the provincial and local administrations should be conducted by the Sanitary Commissioner of each province. The Railway Board which was addressed in the matter has directed the railway authorities to afford every facility to the sanitary officers in carrying out the proposed investigation. The Government have now decided to appoint a committee to examine and advise on the relations of the railway administration with the local Government and the local authorities in regard to public health matters.

The Committee will consist of the following members :—(1) The Surgeon-General with the Government of Madras, (2) The Director of Public Health, (3) The Secretary to Government, Public Works Department, (Railways), (4) The Agents with Chief Medical Officers of (a) South Indian Railway, (b) Madras and Southern Mahratta Railway, (c) Bengal and Nagpur Railway, (5) The Secretary to Government, Local Self-Government Department, (6) The Director, King Institute, Guindy, and (7) The Sanitary Engineer.

The Surgeon-General will be the Chairman of the Committee and the Director of Public Health, the Secretary. The Committee is requested

(1) to examine the relation of the Railway administrations with the provincial and local administrations and to suggest what changes, if any, are therein necessary with the object of securing the co-operation of Railway administrations in checking the spread of infectious diseases, such as cholera and plague, small-pox and malaria ;

(2) to examine the relevant portions of the American Railway Association Sanitary Code and to report as to the feasibility of adopting a similar uniform Code for the Railways of Madras Presidency;

(3) to examine the recommendations made in the Pilgrims Committee Report 1915 and to suggest what improvements, if any, are required at Railway stations as regards : (a) water supplies, (b) food supplies, (c) latrine accommodation, (d) festival arrangements, and to submit a report to the Government before 31st December 1922.

From the lowly corn cob it is, says the *Popular Science Monthly*, now possible to produce low priced substitutes for hard rubber and synthetic resin products, thanks to research work by Chemists of the Department of Agriculture. These chemists announce that a new motor fuel supply may also result. These achievements, it is said, have been attained through the perfection of methods for producing from corn cobs a chemical compound known as furfural. The compound is made in a pressure cooker. Furfural, blowing off with the steam, passes through a condenser and is separated from the water by distillation.

Industrial Notes from the United States.

By A. T. Marks.

Romance of Automobile Industry.

Washington, D.C., U.S.A., September 29, 1922—The romance of the automobile is still one of the wonders of American industry, and its development seems to have no limit. This is evidenced by the value of the automotive output for 1922, which is as follows: Automobiles, $1,350,000,000; tires, $675,000,000; parts, $550,000,000; accessories, $150,000,000; —making a total of $2,725,000,000. This output is 33 per cent greater than the value of the output in the second largest industry—the refining of petroleum—and more than 65 per cent larger than the value of the iron and steel output, also more than double the value of all cotton goods produced in the textile mills of the country.

In the short space of about twenty years the automobile business has become the most essential of our manufacturing industires, because it directly affects a greater number of what might be termed "basic" industries, than does any other manufacturing industry in the United States.

The annual imports of crude rubber for tires into the United States are now over 600,000,000 pounds per annum. Production of plate glass this year will total over 68,000,000 square feet, and nearly one-third of this (or 21,500,000 square feet) will be required for automobiles.

This year 5,400 million gallons of gasoline will be produced. About 4,320 million gallons, or 80 per cent of the total, will be used in automobiles.

While over 850 million gallons of lubricating oil will be produced in 1922, only 575 million gallons will be required for domestic consumption. About 230 million gallons, or over 40 per cent of the domestic consumption will be needed for the operation of the automobiles.

About 75,000 bales of Egyptian-type long staple cotton will be grown in the United States this year, while 400,000 bales will be imported from Egypt. About 38 per cent of this total—or 180,000 bales—will be used in the manufacture of automobile tires.

Any weakness in the market for automotive products is found to be immediately reflected in the business of all of those industries which depend wholly or in part on the automobile business for a market.

With its various subsidiary lines, the automobile business influences the industrial labour market to a more pronounced extent than does any other great industry. There are over one million wage earners in automobile production, sales and service work in the United States, whose income is derived directly from the industry. In addition to these there are 935,000 other wage earners who derive their incomes indirectly from the automobile industry. These are drivers, chauffeurs and workers in industries supplying raw materials to manufacturers of automobile products. Figures for the workers in these industries were obtained by multiplying total workers in each of these industries by the percentage of the total output needed for automotive products.

So, directly and indirectly, the automobile industry influences the employment of close to 3 million wage earners.

There are 13 million wage earners supported from manufacturing industries or engaged in transportation, and of these 14 per cent are dependent upon the automobile industry.

The automobile is to-day the leading passenger transportation agency in the United States. There are to-day 55,260 railroad passenger coaches in use, having a seating capacity of 2,290,000 passengers. The seating capacity of the 9,600,000 passenger automobiles now in use in the United States is 48,000,000.

America's Sugar Story.

The adjective "sweetest" has long been applied—and appropriately so—to sugar, and not so long ago a new word, "dearest," was crowding it for popularity. As is well-known, sugar in one form or another is one of the most plentiful foods we have, for it comes from many sources. The sugar of commerce, however, is obtained principally from two raw materials: the sugar-cane and the sugar beet. Only three countries in the world produce both cane and beet sugar; these are the United States, Australia and Spain. For cane production is practically restricted to the tropics, while sugar beets are grown mainly in the temperate zone. One-fifth of the world's production of cane sugar comes from Cuba, another fifth from your own country of India, and one-tenth from Java. Next in order of importance as producers of sugar, of one kind

or another, are Germany, Austria, Russia, (in normal times), the United States, Hawaii, Porto Rico, Formosa, Australia, Peru and Mauritius.

During the war one-third of the world's sugar-producing area lay within the battle lines of Europe. The war has had the effect of largely increasing production in India, Cuba, and Java, but Porto Rico, Hawaii, the Philippines and the West Indies show little increase, although all of these countries have been important sugar-producing districts for a long time.

In 1910 the world's production of cane and beet sugar was equal. Now the ratio is about 70 per cent cane to 30 per cent beet. In Europe the production of France has been reduced to a fraction of its pre-war size, and Belgium and the Central Powers are producing about half as much as formerly.

The United States is not the greatest consumer of sugar per capita, that distinction going to Australia, with an individual consumption of over 100 pounds per annum; but at the rate we are increasing our consumption we shall soon outstrip Australia. In 1921 we used over 4 million tons of sugar in the United States, or 16 per cent more than in 1920. This amounted to 93 pounds per capita, as against 85 pounds in 1914, 79 pounds in 1917 and 73 pounds in 1918.

The United States is dependent upon outside sources for over three-fourths of its sugar-supply. While cane sugar is grown in a limited area in the southern part of the country, principally in the State of Louisiana, our domestic supply of cane sugar represents less than four per cent of our consumption, and would last us but fourteen days each year. From our domestic crop of sugar beets we obtain a larger quantity of sugar, and the supply from this source would fill our wants for 78 days out of a year. Cuba supplies us with more sugar than any other country, sending us almost 51 per cent of our entire consumption. We secure almost 13 per cent from Hawaii, 7 per cent from Porto Rico, 2 per cent from the Philippines, and a little over 2 per cent from various outside sources.

The following table shows the sources of the sugar used in the United States in 1921 :—

United States beet	872,253	tons
American cane	154,034	tons
Hawaii cane	514,824	tons
St. Croix cane	8,286	tons
Porto Rico cane	286,880	tons
Philippine cane	75,511	tons
Cuba cane	2,067,051	tons
Maple sugar and molasses	34,094	tons
Miscellaneous foreign	57,738	tons
Total	4,067,671	tons

Cotton Boll Weevil Destroyer.

The immense damage and loss caused by the cotton boll weevil has stimulated inventors to search for some effective means of destroying the pest, which has gained a tremendous foothold in many of the southern states of this country. It has been recognized that to be successful a machine must not only collect and destroy the living boll weevils, but it must also gather and destroy the flower buds and the young cotton bolls in which the eggs and grubs of the pest exist and flourish. The discovering of such a machine or means has been the objective of many inventive minds in this country for a long period of time.

That success is now about to crown the efforts to devise such a machine appears to be certain, according to the Government experts here in Washington. The most successful attempt along mechanical lines is the invention of a suction machine that has shown excellent results in rather extensive and difficult tests. This machine consists of a large exhaust fan mounted on a light but substantial wheeled frame, with tubes leading from the suction side of the fan to flexible tubes which terminate near the ground. Spring wire agitators and adjustable gathering arms are mounted on the frame in front of the suction tubes, and as the machine is hauled through the cotton fields by a team the weevils and infected buds and bolls are dislodged from the plants and drawn into the exhaust fan. As they pass through the fan they are dashed against baffle plates and destroyed. After they have gone through the fan they pass into a dust collector and separator, in which all the heavier particles are sifted out and dropped on the ground, while the air escapes at the top of the collector.

It is estimated that one of these ingenious machines can cover twenty acres of cotton field per day, and that five treatments, given at intervals of ten days, should entirely rid the fields of all weevils and destroy the eggs and grubs in the infected bolls.

It is said that a highly capitalized company is now in course of formation to place the weevil destroyers on the market in a large way.

PHOTO PLATES OF GELATINE ON PAPER.

A discovery which is said to be of very great importance to the photographic industry has just been announced here. This is nothing more or less than a satisfactory substitute for the troublesome glass negatives. As is well known, photographic plates made of glass are both fragile and heavy, and those made of celluloid film have other objectionable features and are dangerous beside. These objections are all avoided, it is claimed, in plates which have now been placed on the market here, and which are being adopted extensively by the photographic industry. These are made of paper. The sensitized gelatine is attached by an adhesive to a thin sheet of varnished paper, which gives it considerable stiffness, so that it may be used with any plate holder the same as the long used glass plate. The plate is slid into a three-sided frame that fits the slots in the plate holder. One desirable effect of the paper backing is to prevent what is known as "halation", which is caused in other plates by intense light or over-exposure. With the new plates, after exposure the plate is developed in the usual way, and although it is not transparent the developed picture can be readily seen by reflection. When developed the plate is well washed and afterwards, while still wet, is plunged into a "tanning" bath, which has the effect, after the plate has been well dried, of allowing the paper to be easily separated from the film, which is then ready for printing. It is predicted that the newly devised will in short time entirely supersede the time-honoured glass for photographic purposes.

RETREADING YOUR OWN AUTO TYRES.

A leading American manufacturer of motor tyres makes the statement that tyres can be retreaded very readily and inexpensively. He thus explains the process and how to go about the job or retreading :—" The rubber on an automobile tyre acts as a water-proof coating and a protection to the fabric against wear. When the rubber over the tread has worn away water can easily enter and rot away the fabric, and friction with the road will tear it apart and cause premature blow-outs. That is the reason for retreading. It prolongs the life of the tyre greatly, provided there are no weak spots in the side walls or head. But, as is well-known, retreading is somewhat expensive when done by professional mechanics. As a substitute I have found the following method, which is inexpensive, to give excellent results :— Take the tyre before the tread is badly worn through, inflate it to full pressure, and clean it off thoroughly with gasoline. Then sandpaper it as if preparing to patch an inner tube. Now wash it a second time with gasoline. Next unroll a strip of patch rubber, which is nearly pure gum rubber and may be bought in pieces 24 inches long by 3 inches wide Lay this on a board, and with a sharp knife cut it into two strips 24 inches long and 1½ in. wide. Apply a good coat of self-curing patch cement, rubbing it well over the edges of the rubber. Then let it nearly dry. When the cement is tacky pick up the strip with both hands and lay it lengthwise in the exact middle of the tread. Now pat it gently from end to end with a smooth piece of board until every portion is in perfect contact with the tyre. Treat a second piece of rubber in the same manner and apply to the tread, butting the end against one end of the piece previously applied. Continue this until the whole circumference of the tyre is retreaded. If there are any visible breaks between the abutting sections of rubber fill them in with some good tyre "dough" or putty, which will self-vulcanize and make the retread endless. When completed lower the tyre to the floor and slowly push the car backward and forward several times to press the retread firmly on the tyre and to eliminate any possible air bells. Jack up the wheel again and leave it there several hours before using."

In the U. P. Legislative Council Rai Bahadur Kuar Paramanand moved a resolution recommending the enhancement of the period of revenue settlement from 30 to 50 years. The Government remained neutral, Sir Ludovic Porter stating that they had not yet received the report of the Committee appointed to consider the question. The liberals opposed the motion. Mr. Chintamani, the Minister, siding with the opposition, remarked that, if the resolution was accepted, it would be a reflection on the Committee. The landlord members supported the motion which was carried by 52 votes to nil. When the division was called, no member actually voted against the motion. The Council also adopted with a slight modification the motion of Pandit Hridayanth Kunzru for the appointment of a Committee with two-thirds elected non-official majority to enquire into the provincial expenditure and recommend measures leading to economy and retrenchment.

Views and Comments.

BY "ECONOMICUS".

In the course of the same speech, Lord Inchcape referred to the present fiscal controversy and said :—"If he understood his Indian protectionists aright, they wanted nothing to be imported into India. They wanted ships to come out empty and go home full. That would be a fatal mistake." The position of the Indian protectionist is not so ludicrous as that, but he is not at all disposed to exaggerate the importance of India's external or foreign trade; he believes that the internal trade of the country which will be fostered by the healthy growth of several industries for which conditions are favourable will increase the prosperity of the masses.

* * *

In a letter to Lord Inchcape, the Council of the European Association, Calcutta, suggests that "the situation in India demands rather than retrenchment a far-seeing financial policy intent upon the industrial and agricultural development of the country; retrenchment in the machinery of administration is not likely to produce the desired effect." To talk of the industrial and agricultural development of the country is very easy, but, while we welcome every such measure calculated to promote the end, we are not so sanguine about its immediate outcome to relieve the pressure of Government expenditure. The European Association perhaps believes that we have an ideal, most economical and most efficient administrative machinery in the world. We beg to dissent from this view.

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Presiding over the annual Dinner of the Bengal Association of the Institution of Engineers, Sir George Godfrey, Agent, Bengal-Nagpur Railway, said :—"The first necessity of the masses in India was improved means of communication to market their produce and if agricultural classes were given a fair chance of circulation outside their own villages, they would be gaining far more useful education than could be picked up in inefficient primary and secondary schools." We have already noted in these columns the inveterate habit of some in this country to regard India's prosperity in terms of communication facilities, especially of the Railway—an erroneous view—but we never expected that they would prefer the Railway extension to the spread of education.

* * *

In the course of his reply to the debate on the motion for introducing the State Aid to Industries Bill which, by the way, was passed without one dissentient voice in the Madras Legislative Council, the Hon'ble K. V. Reddi Naidu, Development Minister, referring to the complaint that there was no provision to protect the purely Indian interests, said :—"The main consideration bestowed on the Bill was the welfare of the country at large. The racial feeling was not at all taken into account. As for European capital, he said that one of the accepted canons of Political Economy was that capital crosses frontiers. It would be folly at the present day to refuse to receive foreign capital and foreign assistance." The ordinary objection against foreign capital is not *racial* as far as we can make out, but *economic*. Capital certainly crosses frontiers if it can or is allowed, but the *foreign* capital in India is, for many cases, *Indian* capital in foreign hands. Mr. Reddi misses the point of State assistance, we are afraid, when he fails to see the need for giving special encouragement to indigenous enterprises. But Mr. Reddi, the individual, is too shrewd to forget this and so he said in the course of the same reply : "His opinion was that before assistance could be given to industries coming under this head, five conditions should be satisfied, viz., (1) Capital should be on the Rupee basis; (2) managing directors should live in this country : (3) guaranteeing a certain proportion of shares to Indians; (4) a corresponding proportion of the directors should be Indians; and (5) Indians should be allowed training in the industries for gaining knowledge." Then why not embody these provisions in the Bill?

Economic Notes.

INDUSTRIAL, AGRICULTURAL, EDUCATIONAL AND GENERAL.

It is reported that large quantities of cheap chrome leather have been imported into Italy from Austria and Hungary. Owing to this competition, German manufacturers have been compelled to reduce their prices.

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Sir W. S. Brancker, in an article in the "Financial Times," says that Britain must have air transport between herself and the Dominions, whether it pays or not. Otherwise the Empire cannot remain as it is.

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It is announced that the first batch of Welsh tinplate workmen left Swansea and Neath on October 5 for Clonmuri Works, India. The works are situated a few miles from the Tata Steel Works, where British steel workers are already employed.

* * *

Speaking during the recent British elections Sir H. Brittain made it clear that the British dyestuffs industry was regarded as a safeguard of India's textile trades as well as of those of Great Britain, and he declared that any proposal to repeal the Dyestuffs Act would be resisted by all who had the Empire's interests at heart.

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A commission which recently inquired into certain matters connected with the working of the Jamaica Government Railway has recommended that the Government should appoint a board of directors for the department, and that the executive officer of the Railway should, in future, be known as the Managing Director.

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Although no official pronouncement had been made, says the *Times of India*, we believe it has been decided in principle to inaugurate at once the Sukkur barrage and canals in Sind, which will command five and one-third million acres at a cost of Rs. 1,835 lakhs, and bring in a return of ten and a half per cent on the capital cost. The immediate commencement of the Sukkur barrage has been made an imperative necessity for Sind by the sanctioning of the Sutlej scheme, because that work will seriously impair the summer supply to the inundation canals of Sind.

It is understood that Sir D. P. Sarbadhikary is now in communication with the Government of India on the question of improving the size and quality of postal envelopes. He has suggested that more writing space should be allowed on post cards reserving not more than one-fourth of the space or the reverse sides of the post cards.

* * *

All paper, so long as it contains cellulose, must decompose and fall to pieces after long use in the form of books, writings, manuscripts, etc. In the "*Chemiker Zentang*" are described various chemical agents which can be used to destroy the germs and insects that cause the decay of paper. Hypochlorites, superoxides and other chemicals are used for this purpose.

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The report on Forest Administration in the Central Provinces for the year 1920–21 says that it has been decided to introduce departmental lac work in the south Raipur division, but as existing contracts have not yet expired, preparatory measures only have so far been possible. The departmental cultivation of lac in Damoh, Saugor and Hoshangabad is giving satisfactory results.

* * *

A Japanese inventor has produced a paper reports the *Every Day Science*, which will stand being washed with soap and water, and does not suffer by being crumpled up. It has a texture somewhat like cloth, is said to be cheap, and is strong enough to be used for the covering of umbrellas. No special precautions are needed in washing it, and it is dried in the usual manner. It is not made waterproof by oil.

* * *

Messrs. D. N. Strathie, I.C.S., and R. K. Shanmukham, M.L.C., who were deputed by the Madras Government to proceed to Bombay and the United Provinces and Bengal to report about excise administration and temperance measures inaugurated by these Governments, have completed their reports. It is believed as a result of report submitted by them Government will undertake some definite measures in the cause of temperance.

The Oxford correspondent of the *Times* says :—Recruiting for the Indian services has almost ceased. Last month's successful candidates for Civil Services contained two Englishmen and eight Indians. The educational and medical services are even more moribund. Young engineers are most scarce while the Cadre for forestry is 119 men short. In the face of the O'Donell Circular and the general uncertainty it is difficult for the Oxford authorities to recommend an Indian career.

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According to a report made to the Hungarian Academy of Sciences, a process has been developed in Hungary for treating corn straw, of which large quantities are available in that country. The Veyi Ipar process, as it is called, produces 40 pounds of cellulose, 40 pounds of molasses and 5 pounds of artificial fertilizer from every 100 pounds of straw. The considerable value of the by-products represents a decided advantage over the ordinary methods of obtaining cellulose from wood chips.

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A maiden speech was made by Mr. Saklatvala on the occasion of the debate on the King's speech. He attributed the loss of trade with India to the imposition of the constitution on India which had been written outside India and also to the capitalist system which was responsible for the erection of seventy-four jute mills in Bengal. This had resulted in the shutting of shops in Dundee and employing Bengal labour at thirteen shillings a month and the reaping of dividends from a hundred to four hundred per cent.

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It is understood that immense interest is being taken in regard to Arghan by textile interests throughout the world. With a view to still further development the directors of Arghan, Limited, are concluding arrangements with the Kuala Pahi Rubber Estate, Limited, whereby the reserve land owned by that company in the Federated Malay States will be opened up and planted with the valuable textile fibre plant. The Arghan company will furnish sufficient plants and also give the services of their experts for its cultivation. It is calculated that an acre of the Arghan fibre plant will produce 15 cwt. of marketable fibre, which, taking one year with another, should certainly be worth £45 per ton. Innumerable inquiries are being made every day to Arghan, Limited, for supplies of the fibre for various purposes.

A Report from the Chief Officer of the Seneca Fire Brigade, U.S.A., draws attention to the remarkable efficiency of Portland Cement in extinguishing fire. In the course of a fire which started in a general store and extended to an adjacent timber yard, the use of cement, of which there was plenty at hand, was suggested, and it was employed partly by scattering the material dry over stacks of timber in immediate danger, and immediately wetted by the fire brigade, and partly in the form of thin grout thrown upon blazing timber. The effects were prompt and astonishing, the spread of the fire being almost instantly checked. The flames from timber already burning began to abate and within 1½ hours the fire was extinguished. The cement grout thrown upon the blazing wood is said to have had a threefold effect ; (1) It acted similarly to dry power chemicals, reducing the fire quickly and more efficiently than chemical powder, as it acted in spite of the fact that the fire was in open air ; (2) It almost entirely stopped the flying of sparks and tinder ; (3) It caked over the fire, smothering it and shutting out air, so that combustion could not take place.

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According to the Bloemfontein correspondent of the "Cape Times," a Free State farmer-attorney has invented a new motor fuel obtained from the juice of the prickly pear by admixture with certain chemicals. The new motor fuel is said to be equal to petrol. It is maintained that the engine starts up easily from cold, and that no one could detect any difference in running between the new spirit and petrol, and that no special carburettor adjustments are necessary. An important difference between this spirit and other power alcohols, it is claimed, is that both raw material and the chemicals and denaturants with which it is mixed are obtainable in inexhaustible supplies in South Africa. This renders it possible to produce the prickly pear fuel at about nine pence per gallon, and the spirit can be retailed at about half the present price of petrol. The inventor, Mr. A. C. de Villiers, of Edinburg, has named the fuel "Springbok motor spirit". Mr. de Villiers announces that he has secured a plant capable of producing two million gallons to begin with, which is about one sixth of South Africa's total consumption. Since the spirit was tested in Bloemfontein, a company with a capital of £100,000 has been formed to extend and exploit the invention.

At present railways in Germany consume a tenth part of the coal produced and it is of the utmost importance that this coal consumption should be reduced. The introduction of electricity would not only save fuel, but also mean a great reduction in coal traffic, which is one of the difficulties of goods transport in Germany. The Minister for transport is said to be pushing the matter to the best of his ability. South Germany is particularly well supplied with water power, and there is no reason why the entire railway system should not shortly be electrified.

* * *

Samples of every class of wood produced in Jamaica and used in the manufacture of furniture and other articles have been obtained by the Canadian Trade Commissioner in the Colony at the request of the Department of Trade and Commerce at Ottawa, for shipment to the Dominion. The samples are to be polished before being shipped to Canada, and will be used to interest furniture makers of the Dominion, especially those who cater for the oversea trade, to turn their attention to the British West Indies for supplies of mahogany, cedar, etc., for their factories.

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An agreement has been entered into by which Messrs. Cox & Co. acquire the old-established banking and East Indian Agency business of Messrs. Henry S. King & Co. and their Indian branches, Messrs. King, King & Co. and Messrs. King, Hamilton & Co., Messrs. Henry S. King & Co. was founded under the title of Smith Elder & Co. as long ago as 1816, and Mr. H. S. King joined the firm in 1853. The name was changed to Henry S. King & Co. in 1868. For the last 44 years Sir H. Seymour King, who is now nearly 71, has been the sole partner. We understand that, on account of increasing years, the step now taken has been contemplated for some time past, and a recent severe illness caused Sir Seymour to decide that the time had arrived to amalgamate the business with Messrs. Cox & Co. It is a wise decision, for every one concerned in this fine old business must benefit from the passing of its control into the hands of a strong institution. For the present, no change will be made in the title or management of the business. The balance-sheet makes a very favourable showing. The proportion of cash to deposits is nearly 19 per cent. Out of the total liabilities of £1,937,932, no less than £1,110,031 is represented by cash, bills, and readily realizable investments.

Some particulars of Sir Alfred Mond's Empire Development Scheme which according to Mr. Lloyd George would have been submitted to Parliament had he continued in office are now published. Sir A. Mond considered that the best chance of building up trade lay within the Empire. The essence of his scheme was the promotion of a loan of fifty to hundred millions sterling guaranteed by the Imperial Government the proceeds of which would be utilized to enable colonies especially the African possessions including those acquired from Germany to develop their own resources more completely than at present, by the construction of roads, railways and harbours, work involved thereby being found for a portion of the million unemployed in Britain whose support was costing nearly a hundred millions sterling a year.

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A University experiment with aims at developing the "scientifically perfect baby" is reported to-day from Orono, the seat of the University of Maine. The baby on whom the experiment is to be attempted has already been selected, and the name of the infant, Frances Pauline, is given to an interested world. It has been borrowed by six senior girls who are attending the University under the co-education system, and are students in the Home Economic Department. Frances Pauline will be used during the school term for the practice of "intensive mothering," each of the six taking her in hand for a week at a time. At the end of the term Frances Pauline, it is hoped, will be well on the way to perfection. The mere man's view is that only the fittest could survive such an ordeal.

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A writer in the *Paper Trade Journal* writes that oat hulls can be used on good advantage in the manufacture of paper pulp and strawboard. The oat hulls are digested with lime. The cost of the product should not be higher than that in the manufacture of pasteboard from straw. The strength of the oat hull product is not as great as that of the straw product, but by admixture of the two raw materials a very tough paper may be obtained. In making pulp from the oat hulls, the latter are mixed with cotton linters or cotton hull fibre and treated according to the sulphate process. The high yields that are obtained and the good quality of the product indicate a promising source of pulp for the manufacture of paper used for printing books, magazines, for writing purposes.

Economic Reviews Reviewed

WITH EXCERPTS AND COMMENTS.

Industrial Co-operative Societies.

The September issue of the 'Bombay Co-operative Quarterly' contains, among other articles of interest, a reprint of the paper presented before the First All-India Industrial Welfare Conference, Bombay, written by Mr. N. K. Roy entitled "Co-operative Societies among Industrial Workers." He discusses the subject under two heads :—1. Co-operative factories ; 2. Co-operative Societies among factory workers. Writing about the constitution of a co-operative factory, he says :

"Take some suitable industry, a jute mill or a cotton mill. In order to have co-operative mill, the co-operative organizers will first have to organize a number of co-operative sale societies among cotton or jute growers ; when the quantity of raw cotton or jute available through such sale societies reaches the minimum required to feed a mill, some enterprising organizer who believes in the possibilities of co-operative production might float a company. There will be two classes of shares—preference and ordinary—half the number being earmarked as ordinary. The preference shares will be open to capitalists, the ordinary shares to co-operative sale societies and elevators and to the workmen to be employed in the mill. No ordinary shareholder will be allowed to purchase shares beyond a maximum value. The supreme authority will be vested in the general meeting, in which sale societies and workmen will be represented by delegates proportionate to the strength of individuals who constitute respectively, the sale societies and the general body of workmen. The general meeting will elect the directors, half of whom must be representatives of ordinary shareholders. The profits will be distributed after necessary deduction for depreciation and reserve fund and payment of maximum dividend on shares, as bonus to suppliers of raw material in proportion to the quantity supplied and to the workmen in proportion to the wages earned."

Under the second head Mr. Roy writes, at length, about the grievances of the workers in the coal mines of Jheria, and in the Tata Iron Works at Jamshedpur. He proposes the following remedies : He says that special types of Co-operative Banks may be organized to finance housing schemes and that the owners of the factories should be persuaded to back the loans to the workers by providing additional securities beyond what are available from the liabilities of the members themselves. Next, co-operative stores are badly wanting in Jheria and Jamshedpur to get rid of the profiteering local shopkeepers.

Writing about a constructive scheme of the organization of co-operative stores, Mr. Roy says :—

"1. A number of stores from 5 to 10 should be organized simultaneously with at least 50 members each, and the whole group should be put in charge of a reliable competent general manager who must be well up in business, auditing and accountancy, as well as business experience. A salary of Rs. 200 a month, with a percentage of the profits, ought to attract a good man in our part of the country. The manager will be in charge of making purchases and will have to be in touch with the market. He will ascertain the requirements of the stores and bulk the orders. He will be responsible for giving out supplies from the stores-room to the sales-room and for taking periodical stock of goods. He will be responsible for seeing that the books of the stores are kept in order and will have to make frequent inspections.

2. Each store will have an accountant-manager and two or more salesmen. Each store will have as part of its regular business a savings bank department which will be in charge of the accountant-manager. Proper rules should be framed and pass books issued to each depositor. The main feature of the rules would be :—Deposits will be received from all employees whether they are members of the stores or not. Fractions of a rupee will not be received and no interest will be allowed on sums below a certain minimum, say Rs. 5 or 10, or for periods less than 3 months. But full facilities will be given for withdrawals, the only condition being a short notice of 3 to 7 days. The savings bank will have a case credit with a local bank to meet calls from depositors.

3. Each store will require a suitable building which will have to be provided by the proprietors who may charge a rent for it.

4. It will be necessary in the initial stages for the factory owners to give both moral and financial support. If they find the pay of the general manager and provide the necessary buildings, it will go a great way towards ensuring the success of the stores."

There is also in this journal another informative article, entitled "Co-operative Life Insurance" by Mr. Keshavprasad C. Desai, B.A., LL.B. In this article, Mr. Keshavprasad criticises at length the scheme of Co-operative Insurance for the Madras Presidency published in the March number of the "Madras Bulletin of Co-operation." He says that the objects of Co-operative Insurance, (*viz.*, (1) the desire to institute smaller policies, (2) the desire to eliminate the middleman's profits, (3) the desire to tap a source of long-term capital for the Provincial Central Co-operative Bank) cannot be realized fully under the existing circumstances. Hence he proposes to effect certain changes in the existing Joint-Stock Insurance Companies to attain some of the above objects.

A New Source of Manure.

"The Agricultural Journal of India", Vol. XVII, Part V, contains a great many articles of note. Mr. K. Adinarayana Rao, L.Ag., Assistant to the Government Agricultural Bacteriologist, Madras, has contributed to this number an article entitled "A New Source of Manure." He says in this article, that nitrogen, which is one of the many essential elements necessary for the healthy development of the plant, is very largely removed from the soil by each crop. Hence experiments have been conducted by scientists for the production of suitable nitrogenous compounds to be used as fertilizers. As a result of this three industrial processes, the arc process, the cynamide process, and the Haber process, have become prominent now-a-days. But these fertilizers are of no use to farmers with small means. Transportation of bulky manure with its contents of non-nitrogenous materials is a difficult matter. Hence there is the necessity of investigating new fertilizers having a good deal of nitrogen. Experiments conducted with sugar-cane waste known as Megasse show that it is a good fertilizer supplying a great deal of nitrogen. This manure is specially recommended for sugarcane cultivation, as by using this manure all the ingredients taken by the crop are returned to the soil. This point, Mr. Adinarayana Rao wishes to emphasise taking into consideration the notoriously exhausting nature of the sugarcane crop and the crying need for manures by the cane-grower.

Mr. Adinarayana Rao summarizes his articles thus :—

"1. Of all the wastes, such as (i) straw, (ii) dry leaves, (iii) saw dust, (iv) Megasse, (v) mahua (*B. latifolia*) refuse from distilleries, (vi) prickly pear, etc., megasse was selected first as it contains about 10% sugar.

2. The results obtained so far have been encouraging. Prior to bacterial treatment, megasse contained only 0.27 per cent nitrogen. But after bacterization for a period of two months only, the nitrogen content increased to 1.39 per cent. The loss in bulk was not determined so that the absolute gain in nitrogen cannot at present be stated. The increased amount of nitrogen is twice as much as is contained in farmyard manure.

It is proposed to apply all the methods now ascertained in the utilization of megasse to other wastes which may also become equally useful."

There is in this volume another article of interest entitled "Coimbatore Sugarcane Seedlings in the United Provinces" prepared by G. Clarke, F.I.C., Mohd. Naib Hussain and S. C. Banerjee, F.C.S. In this article, a detailed account is given of the method of examining seedling canes, of the results of the examination of Coimbatore seedling canes, of the composition of that of Coimbatore seedlings selected for field trial and of the discussion of the results of investigation. The article ends with the following note :—"The results of the systematic examination of the first series of Coimbatore seedlings may be regarded as satisfactory. They were the first seedling canes produced and tried on a field scale in India, and the experience of the behaviour of the various types had to be gained. The majority of the seedlings proved to be of poor quality, but one seedling (CO214) of considerable merit has emerged from the rigorous tests applied as a type of cane suited to the conditions of at least one important sugar tract in the United Provinces.

A high standard is undoubtedly set as regards sugar content and purity of the product by the best indigenous canes of the United Provinces and it is in this respect that the Coimbatore series CO201—CO216 chiefly failed.

A wide range of canes is required to meet all the conditions of the soil and cultivation in the United Provinces, and a larger proportion of successes would be probable if a wider range of crosses were made.

The expense involved in carrying out a series of tests such as those described above is considerable. At present the behaviour of a seedling, selected at Coimbatore for distribution in the United Provinces, seems to be a matter of chance. It is desirable to carry out a more effective and rigorous preliminary selection and to eliminate in the preliminary stages seedlings so obviously unsuitable as CO203, CO207, CO209 and CO211.

Comparative Politics from Eastern Data.

"The Lucknow University Journal" for September 1922 contains a great many interesting articles. Dr. Radha Kamal Mukerji's article, "Comparative Politics from Eastern Data" is of special interest to students of Indian politics. Dr. Mukerji writes at length about this subject under many heads—1. The Ethnic and Regional approach to politics; 2. The method of interpretation; 3. The law of correspondence; 4. Applied politics; 5. The different principles of social stratification in the west and the east; 6. The composition and constitution of Indian Communalism. Writing under the last head he says:

"Unfortunately the expansion and development of the pluralistic polity in India and China has been checked even as the development of the Indian village community, essentially an economic democracy, has been wrapped by legislation and administration based on the individualistic Romano-Gothic concepts of social and legal polity. The formation of federal unions or confederations of local and functional groups will represent the coming stage in the social and political history of the east. A type of communal federal democracy thus rising layer upon layer on the bedrock of original and essential groups, local, communal or functional, must necessarily be more suitable for China and India than the imported western institution of representative democracy based on party and territorial regimentation. It is only thus that communalism will be reoriented and expanded into a national state of a new type, which shall give due recognition to the complimentary principles of State monism and State pluralism in its organization. And it is only thus that communalism shall be enabled to withstand the forces of decentralization and exploitation of the mechanical state which has now threatened the peace and liberty of the people in the west and the east alike."

There is in this journal another interesting article entitled "Conflicting ideals in Indian Economic life" by Mr. Hirendra Lal Dey. There are, he says, conflicting ideals, in economic life at present in vogue in India. One school of thinkers dazzled by the glamour of material progress in the west would like to transplant bodily western economic institutions to this country. The ideal that is sought to be attained is complete westernization or urbanization of India. The Government officials, the millionaires of Bombay and Calcutta, the powerful and rich foreign houses, the educated classes, support this ideal. Then Mr. H. L. Dey examines the progress made by the large scale organized industries of India, namely, jute, cotton, wool, etc., and the mining industries, such as coal and iron. It took England 75 years to become the most efficient and successful country in the world. On the other hand, the measure of success achieved in India during the last 60 years cannot stand any comparison with that of Japan or England or Germany. The labourers working in the factories in India are ill-fed, ill-clothed and ill-housed. They are generally a floating population, moving to the country for four months in the year. Reform for bettering the lot of the labourers in factory is badly wanted. Both the Government and the factory owners should undertake to help them.

It is a fact that only 6 per cent of the population in India are engaged in trade and industry of the modern kind. The remaining 94 per cent are dependent directly or indirectly upon agriculture and rural trade and industry and some people are of opinion that the path of progress for India will be a great deal more in the improvement of agriculture and subsidiary rural industries than an advance along the lines of industrial expansion. The factory system of production is of secondary importance in this country. The steps already taken by the Government for the promotion of agriculture are totally inadequate and ineffective. Then the problem in Indian economic eye is how to rescue the peasant from his present helpless state. He may return to his ancient mode of life of self-sufficiency—the idea which underlies the present movement of the "charka". The second method is to help the peasant to multiply the yield of his land by modern methods of scientific agriculture. The work of the Agricultural

Department and the Co-operative Department has been attended with no great success so far. The salvation of the peasant lies mainly in the spread of the most up-to-date system of scientific agriculture and by encouraging and fostering subsidiary and cottage industries in order that the peasant may be partially self-sufficient.

The Problem of Adult Education.

Under the above heading there is, in the "Social Service Quarterly" for July, 1922, an article by Principal J. Mackenzie, M.A. He gives us in the first part of his article an account of the progress of adult education in England in the past century. In this connection he gives a short history of the Workers' Educational Association and the efforts of Mr. Mansbridge in bringing the above association into existence. Then the author tackles the problem of adult education in India. We take the following from this part of his article :—

"Our plans are still rudimentary, but I presume we shall depend for the fulfilment of our hopes on the formation within the existing associations like the Social Service League, the Y. M. C. A., and the Seva Sadan of groups who shall ask for the services of tutors to guide them in their study of some subject. On the other hand we shall have to get together a group of scholars, who will be prepared to undertake the work of teaching and for the present at any rate, I presume, we shall have to rely on voluntary service. So far as our discussions have gone, it seems clear that the general lines on which we shall be prepared to work will be similar to those on which the work of the tutorial class movement in other lands has been conducted. That is to say, the object will be to impart not a vocational but a liberal education, the worth of which will be in itself and not in any rewards to be found beyond it. Also in the actual conduct of the classes there will be the same fellowship of tutor and student in the search for truth and the same untrammelled freedom of discussion. The choice of subjects of study will rest with the students, the range of selection, of course, being determined by the directing authority. It is to be expected that as in England, so in India, the chief demand in India will be for education in economics, history, political science and those other subjects which have a close bearing on the problems of citizenship and on the public questions to which the attention of the reading classes is constantly being directed."

This periodical contains, besides the above article, a many other interesting articles : "Problems relating to Working Mothers and Infants," by Dr. Mrs. F. D. Barnes, M.D., W.M.S., "The Care of the Juvenile Workers" by Mr. K. G. Alurkar, B.A., and "Welfare Work, Trade Unionism and Co-operation" by Prof. H. L. Kaji, M.A., B.SC., I.E.S., are some of the other interesting contributions.

Co-operative Housing Societies in Bombay.

Mr. Otto Rothfeld, B.A., I.C.S., Registrar, Co-operative Societies, Bombay, has contributed to the July number of this journal a very instructive article entitled "Co-operative Housing Societies in Bombay." In this article the writer gives us a short history of the Co-operative Housing movement in the Bombay Presidency. He mentions the names of Mr. Orr, who brought into existence the Improvement Trust, Mr. Ewbank and lastly Rao Bahadur Talmaki, who has taken a leading part in the progress of this movement and who has been instrumental in starting a housing society among the Saraswat Brahman community in the heart of Bombay. We take the following from his article:—

"It will be seen that a real advance has been made by co-operative housing in this Presidency and substantial progress has been achieved. The legal position has now been cleared and safeguarded. The policy of loans by Government has been sufficiently clearly defined and the necessary financial steps are being taken to secure a steady supply of public funds for that purpose. The repayment in equitable and reasonable instalments is also secured and plans and estimates are scrutinized with great care by the expert officials of Government to see that they should be suitable for the class for whom they are intended. Societies themselves are invariably organized on a communal basis. The settlements already erected (8 societies in Bombay City, 8 in Karachi, 2 in Dharwar, and 1 in Ahmednagar) are satisfactory in quality and have provided relief where it was most needed..... What, however, is perhaps the most serious defect in the movement is that so far it has been utterly unable to touch the class which suffer the most from congestion, and is the most severely oppressed by capitalist owners. The mill hands in Bombay and even more n the city of Ahmedabad are living in

conditions which are repellent to the observer. The most desirable object for co-operative housing would certainly be the relief of those classes by the provision of co-operative settlements with cheap but healthy tenements suited to working men and their families. To expect them at this stage to assimilate the principles of co-operation seems almost impossible. It is natural enough that the educated middle class, constrained as it is itself by the conditions of Bombay to look after its own interests as urgently as possible, should hardly find time or energy to devote to the laborious process of educating the labouring classes in self-help; and yet without some such consistent effort by unselfish workers of a higher class, extending perhaps over years with constant reiteration and explanation of facts and principles, it seems difficult to hope for any early relief to a situation among labouring classes which is already dangerous not only to themselves, their health and their morals but also to the well-being and peace of other classes in the community in such centres as Bombay."

There is, in this journal, besides some other interesting articles, a reprint of Resolution No. IX passed at the last Madras Provincial Co-operative Conference regarding the organization of a Co-operative Life Insurance Society. The resolution contains a detailed description of the Co-operative Life Insurance Scheme. In this connection we would like to draw the attention of the leaders to a criticism of this scheme by Mr. Keshavprasad C. Desai, B.A., LL.B., in the "Bombay Co-operative Quarterly" for September 1922.

Topics in the Journals.

International Review of Agricultural Economics, September 1922.—The Distribution of Electric Energy in the Country Districts.

Bulletin of the Imperial Institute, Vol. XX, No. 3, 1922.—Paper-making materials from India and Nigeria.

The Tropical Agriculturist, Nov. 1922.–Coffee Culture, translated from the Dutch—By H. L. Ludowyk, Librarian, Department of Agriculture, Peradeniya.

The Educational Review, Nov. 1922.—The Madras University Bill : A Criticism—By S. K. Yegnanarayana Aiyar, M.A.

Journal of the Royal Society of Arts, Nov. 1922.—The Value of Lock-outs and Strikes—By Lord Askwith, K.C.B., K.C., D.C.L.

Journal of Indian Industries and Labour, Nov. 1922.—Soap Manufacture and the Calcutta Soap Works, Ltd.—By A. N. Palit, M.Sc. Suggestions regarding the Functions of Provincial Departments of Industries—By A. Y. G. Cambell, C.I.E., C.B.E., I.C.S.

The Poona Agricultural College Magazine, Dec. 1922.—Investigation on the Census favouring the development of Red Rot of Sugarcane in Guzarat—By D. L. Sahasrabudhe, M. Ag., M.Sc.

Private Wireless.

The inland stations, together with the coast stations, when the latter are not working with ships, from the nucleus of an organized wireless service providing facilities for public and press traffic at the inland telegraph rates for these places. At present the inland service system is deficient. The position would be improved by fitting high-speed apparatus and arranging that stations are operated from the telegraph offices and also by equipping stations with continuous wave apparatus. To extend facilities feeder stations are provided. With regard to control, the Central Government will be wholly responsible for inland stations. Local Governments remain free to establish feeder stations for their domestic needs, subject to the sanction of the Government of India. When the Central Governments are consulted, they will advise as to types most suitable for feeder stations in any locality. If necessary, they will undertake to operate the stations on behalf of Local Governments provided the latter bear the expenses including the cost of inspection.

As a rule, all wireless messages will be handed in at telegraph offices by senders. In the event of interruption or congestion of traffic on the land lines, public or commercial traffic may be transferred by arrangement between the Postmaster-General and the local Government to a feeder station for transmission. In such cases, the collecting rate shall be divided between the Department of Posts and Telegraphs and the Local Government.

In case of emergency the local Government shall have complete power to decide the communication which shall be maintained between the stations, the class of traffic that shall be carried, and every other matter concerning the working of the feeder stations in the locality, provided always that the Department of Posts and Telegraphs is kept aware of the arrangements made.

Men of To-day.

Signor Benito Mussolini.

Of the many sketches which have appeared on Signor Mussolini, the new Italian Premier, none surpass that of Mr. G. Rayner Ellis, who writes thus in the "London Challenge":—To most Englishmen the name of the Fascisti suggests a reactionary organization in the nature of a white guard, formed to defend the interests of the bourgeoisie against the proletariat, and as much a class organization as a trade union. It is true that the Fascist movement is intensely nationalist, that it makes systematic use of reprisals, and that it has in many cases arrogated to itself the duties of the forces of the Crown. Neither can it be denied that up till now it has been engaged in conflict almost entirely with the communists and Unified Socialists. Yet it would not be correct to conclude from this that it is merely a violent movement on the part of a sort of *bloc national*, representing the possessing classes against the unpossessing. It is as much opposed to certain elements of the wealthy bourgeoisie as it is to the communists, and as it develops further is certain to come into conflict with them. Its theories have more in common with the socialism of Sorel than with bourgeois conservatism or liberalism.

It is not generally realized how greatly the Treaty of Versailles disappointed Italy. Unlike England and France, Italy had not entered the war by the practically unanimous desire of its people. The socialists, the Catholics and the followers of Signor Giolitti were strenuous in their efforts to prevent Italian intervention. The interventionists had, therefore, to point to some positive gain in order to justify the cost in lives and money, and they were unable to do so.

Nationalism, and with it everything that had had to do with the war, was completely discredited. The prestige and morale of the army were at a low ebb, and the peculiar condition of Italian Parliamentary life at this time added to the general discontent. For years it had been in the hands of political cliques, whose leaders set up and deposed ministries from the background. But in November 1919, the carefully erected system gave way before the popular feeling. A hundred and fifty-six socialists were returned, that is, nearly a third of the whole chamber; and, inebriated by the success, the socialists thought the realization of their aims at hand. At this time, the Unified Socialists were affiliated to the Third Internationals. Every step preliminary to the actual revolution was taken. Bombacci, one of the most prominent of the communist leaders, gave the bourgeoisie three months to hand over their property. Red guards were formed in industrial centres, and revolutionary leagues exercised a pitiless despotism in the agricultural districts of Emilia, Romagna, and Tuscany by the murder of recalcitrants or the destruction of their farms. Political strikes succeeded each other with growing frequency and diminishing excuse, even in the services of the State. In Milan, officers and those decorated for valour in the war were chased through the streets, beaten, and sometimes killed. Systematic boycotting made almost impossible for members of the bourgeoisie to obtain the necessities of life, and bomb outrages were committed daily with the object of paralysing industry and terrorizing the bourgeois. The Government took no steps to terminate so unsatisfactory a condition of affairs. Repeated amnesties protected the criminals after each outrage; everything was pardoned in the hope that things might settle down. Naturally they became worse. The culmination of this movement was the seizure of the factories by workers who proceeded to run them by means of their own committees. Signor Giolitti, who was then Premier, chose, perhaps wisely, not to turn them out by force. They had fortified the factories, and the temper of the army was not at all certain. Besides, Signor Giolitti had other opponents to beat. By allowing the workers to remain in possession of the factories he forced the manufacturers to come to terms; then he arranged a compromise by which the factories were evacuated and the workmen given a share in the management of the works. The revolution, which had been promised to follow the occupation of the works, did not take place, and the communists thus threw away their best chance of success.

As early as 1919 the first Fasci di Combattimento were formed by Signor Benito Mussolini, Editor of the "Popolo d'Italia" and of the two or three great personalities of Italian political life. The Fasci were groups of young men, organized in military fashion, determined to restore to the country the peace and order necessary for her prosperity. Greatly augmented in numbers after the occupation of the factories they decided to reduce the communists to parliamentary activity. Their method was one of retaliation; to violence they opposed violence, to killing killing. A system of punitive expeditions enabled the Fascisti of the big cities to counter the red power in the agricultural districts. For months a fierce struggle took place: ambushes and reprisals were of daily occurrence all over the north and centre of Italy, but gradually the Fascisti gained the upper hand. After a while the leaders of red organizations were to be seen asking the protection of the troops who had been an especial object of their hatred, and of the laws they proposed to overthrow. The peculiar organization of the red forces contributed in a way to their downfall. The leaders had become surrounded by a band of extremists who pushed them forward and prevented communication between them and their followers. This extremist nucleus being defeated, more moderate counsels began to prevail. In the agricultural districts, where the Fascisti offered a solution of the land problem better than that of the communists, numbers of red leagues went over to them bag and baggage. Thus the red dictature was destroyed, and with the restoration of order Mussolini saw it was time to embark on a more constructive policy. At the present time Fascism is easily the greatest power in Italy. Its strength, in fact, is such as to give rise to the belief that it must inevitably take over the task of governing the country. It is certain, at any rate, that the party will capture a great number of seats at the next general election, as, owing to the change in public opinion, the present chamber is unrepresentative.

The strength of Fascism lies in the fact that it offers a solution, other than communism, to the large body of Italian opinion which is thoroughly dissatisfied with the capitalist regime as it exists at present, but realizes the futility of attempting to force such a solution as communism on a country so obviously alien to its spirit as Italy. After all, Italy is one of the most individualist countries, and any political system to succeed there must take this fact into account. The Fascisti reject as unnatural and utopian the idea of internationalism. The very basis of their theories is the conception of the nation, almost a personality. From Mazzini they have inherited certain moral and intellectual standards which, though they would be unacceptable to a great many people, yet give them a dynamic force such as has not existed in Italy since the Risorgimento. Their idea of the nation is not aggressive, in the French manner, but aims rather at the development than the expansion of the country. Private property is justified by its utilization for the benefit of the community: when its owner ceases to use it for that purpose it should pass to other hands. All individual capacities should be used in the way which will bring most benefit to the community, that is, to Italy. These conceptions of the nation would be dangerous in the hands of many nations, but it is unlikely that the Italians will pursue them to that point. The philosophy of the Fascisti like most Italian political philosophy is rather intuitive than strictly formal, and there are at the head of the movement men such as Mussolini whose energy is tempered by clear perception, men who have the national enthusiasm of Garibaldi but a greater political insight. Had it not been so, the Italian Government would have been overthrown, perhaps forcibly when it attacked d'Annunzio in Fiume. The Fascisti naturally sympathized with him, but their leaders restrained the tendency to violent action. When the party takes over the government of the country, its policy will probably be more constructive and economic than political. There will be no attempt to drive the workers from the position they have obtained, but energy will be concentrated on what may be called the modernization of the country, all of whose resources will be developed as far as possible.

From Washington comes the most original suggestion heretofore made as a practical method of Great Britain wiping off her debt to America. It was advanced by a Congressman, Mr. MacGregor, in a speech in the House of Representatives, namely, that Great Britain should cede to the United States that part of Canada lying about the great lakes. Mr. MacGregor argued that this would be a bargain to both nations and a blessing for the portion Canada involved would make both sides of the Niagara River "the industrial centre of the world."

Economic Development Board.

U. P. Industries Board.

A meeting of the Board of Industries was held at Cawnpore in the office of the Director of Industries, on 15th November. (1) The Board approved the scheme for opening Night classes at the Government Leather Working School, Meerut, as an experimental measure and emphasized the desirability of locating the classes in or near the artizan's quarters. (2) A Sub-Committee consisting of Khan Bahadur Sheikh Naqbel Husein, C.I.E., Messrs. Karam Chand (Executive Engineer), Souter (of Messrs. Ford and Macdonald), Lane Brown (Engineer, Lucknow) and Nat. Heard (Principal, School of Arts and Crafts) was appointed to go into the question of the proposed draughtsmen's classes including the question whether the said classes should be attached to the School of Arts and Crafts, Lucknow. (3) The Board generally endorsed the report of the U.P. Public Works Committee, 1922, and resolved to invite members to send up criticisms and suggestions for the consideration of the Board at their next meeting. (4) The Workmen's Compensation Bill was considered at great length. The Board recommended that the percentages of loss of earning capacity in schedule I should be reduced; the definition of "wages" should exclude bonus; that compensation to a minor for fatal injury, etc., should be Rs. 200; that schedule I should be treated as fixed and immutable irrespective of the question whether the actual percentages are higher or lower; that if workmen are to be required to submit themselves to examination within a certain period, the notice should be *in writing*; and that workmen should not be compelled to undergo even free medical treatment at the hands of the employers' medical men. (5) The question of the proposed Textile School at Cawnpore was discussed and it was resolved to take up the discussion at the next meeting.

State Economic Council in Cairo.

The Egyptian Government has taken an interesting step in the creation of an Economic Council attached to the Ministry of Finance. As the Report of the Commission of Commerce and Industry pointed out, there are many economic, financial and social problems which will have to be faced in the near future. Funds will have to be provided to aid in an early solution of these problems, and the question as to which has prior claim will also have to be carefully examined.

The task is obviously too great for one man to tackle. The consideration of any one of the problems requires expert knowledge in many branches. The Government has accordingly taken the very wise step of appointing a Council consisting of senior Government officials in the Departments most interested in economic questions, and European and Egyptian economic and financial experts outside the Government.

The Council, which will be presided over by the Minister of Finance, will consist of the Under-Secretaries of State for Finance, Communications, Agriculture, Education, and Public Works, nine Egyptians and eight Europeans. Amongst the latter are the Financial Secretary to the Ministry of Finance, the governor of the National Bank of Egypt, the managing director of the Credit Foncier Egyptien, the managing director of the Societe General des Sucreries et de la Raffinerie d'Egypte, the general manager of the Banque d'Athenes, and the Controller-General of State Statistics.

The duties of the new Council will be to conduct exhaustive inquiries into all economic questions referred to it by the Ministry of Finance, to carry out such research work in this connexion as may be necessary, to make recommendations for the development of the financial and economic resources of the country, to reconcile the interests of the State with those of the industrial and agricultural elements of the population, to encourage private initiative, to develop the co-operative movement, to improve the remunerative nature of all public services having an economic character, and generally to expedite by all possible means the economic development of the country.

The idea of the creation of this Council is excellent, and it has been well received in financial and commercial circles in Egypt.

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The Growth of Taxation in the United States.

By Virgil Jordan.

The problem of the reduction and wider diffusion of taxation looms up as one of the most important economic problems in the United States at present, and will occupy an increasingly important place in public attention in the next few years. It will be made a subject of agitation in the first place, by industrial and business interests which feel that the growing burden of taxation is hampering industrial progress by encroaching upon the national surplus necessary for industrial replacements and betterments, and which are demanding not only a reduction in general taxation, but changes in the tax laws so as to lighten the special burdens that bear on industry and business. As a new alignment of political parties develops there will arise on the other hand a demand from the more liberal factions for revisions that will increase taxes on the larger incomes and upon excessive business profits and ease the burden upon the middle class.

The question grows in importance because it is increasingly evident that the United States is no exception to the general rule that government expenditures and taxation in all the leading industrial countries have risen in the past two decades to unprecedented heights and are consuming an ever large portion of the national income. This is true regardless of the fact that in the United States the war was financed with practically no currency inflation and that the government has not seen fit or been compelled to engage in commercial or industrial undertakings that have resulted, as in some European nations, in added drains upon the public treasury. Despite the pursuance of comparatively conservative financial policies during the war, and notwithstanding her more favourable economic position after it, outlays of the national, state and local governments in the United States and the accompanying *per capita* tax burdens have shown a tendency to steady growth not essentially different from that in Great Britain, France, Germany, Italy, and Japan.

For instance, in the ten years before the war, from 1903 to 1914, the total governmental expenditures in the United States increased from $22 to $35 *per capita*, as compared with an increase from $40 to $42 in the United Kingdom; from $24 to $33 in France; from $14 to $22 in Italy; from $44 to $69 in Germany and from $5 to $8 in Japan. At the end of the war in the fiscal year 1918–19 *per capita* public expenditures were $88 in the United States, $130 in the United Kingdom, $84 in France, $46 in Italy, $114 in Germany, $6 in Japan, in terms of pre-war internal purchasing power. That the coming of peace did not radically reduce government outlays is seen from the fact that the *per capita* expenditures in 1920–21 were $45 for the United States, $61 for Great Britain, $77 for France, $26 for Italy, $56 for Germany, and $7 for Japan.

From 1903 to 1914 the *per capita* taxation of these countries rose ninety-five per cent in Japan, sixty-two per cent in Germany, thirty-six per cent in France, thirty-one per cent in the United States, twenty-seven per cent in Italy, and fifteen per cent in the United Kingdom, and by 1921 the *per capita* taxation reached $41 in the United States, $16 in Great Britain, $25 in France, $8 in Italy, $19 in Germany, $5 in Japan. The United Kingdom thus ranks first in tax burdens, the United States second, France third, Germany fourth, Italy fifth, and Japan last,

That taxation in the United States has not much receded since the war is indicated by the fact that, while federal taxes alone totalled 4,926 million dollars in 1919 and 4,430 million dollars in 1921, a nominal decline of 11.2 per cent, the 1921 dollar had a purchasing power 26.9 per cent more than the 1919 dollar, so that the federal tax burden in 1921 was actually 15 per cent higher than in 1919.

It is, however, the relation of these increasing tax burdens to the national income that is a true measure of their effect on economic conditions. The total *per capita* tax burden on the pre-war internal purchasing power basis consumed in the fiscal year 1920–21 one-eighth of the pre-war national income of the United States, one-fifth in the United Kingdom, one-twelfth in France, one-sixteenth in Italy, one-eighth in Germany and one-fifth in Japan. In the fiscal year 1913 taxes paid to national, state and local governments in the United States represented 6.4 per cent of the current national income. By 1919–20 the ratio had increased to thirteen per cent and by 1920–21 to 14.3 per cent. In the calendar year 1921 one-sixth of the national income went to taxation in the United States.

The tax burden and the consumption of income by taxation varies widely among the separate states in the United States, the highest *per capita* taxation in 1919 was $148.36 in New York State, the lowest in Alabama $26.47. Taxation consumed over seventeen per cent of the state income in New York State, and for all the states taxation represented about 12 per cent of their income.

A large part of the increase in tax burdens in all countries is due to a great relative growth of state and local taxation. This is especially true in the United States. Local taxation increased eighty-two per cent in the period from 1912 to 1919, twenty-one per cent from 1919 to 1920 and twelve per cent from 1920 to 1921. State and local taxation in the United States is now almost equal to the federal taxation for the country as a whole. In sixteen states in 1919, state and local taxation exceeded federal taxation. The relative burdens of national and local taxation varies widely from state to state, federal taxation falling most heavily on the manufacturing states and local taxation on agricultural and mining states. The latter has become so serious in some states, as in Arkansas, that the citizens have virtually rebelled and appealed to the Federal Government for relief.

This situation is a result not only of the war, but of vast expenditures for road building, for bonuses for soldiers, and for mady other activities of the government due to its economic and social policies and to local political influences. Federal and local government is more costly than ever before, and a realization of the fact is drawing public attention more and more to political inefficiency and graft and stimulating growing criticism of governmental policies. As a result the Administration's proposed shipping subsidy, the "bonus" legislation (additional grants to soldiers) and the effects of prohibition on government finance are being subjected to more careful scrutiny than they might be if the public were not chafing under a tax burden which the coming of peace seems not to have materially lightened. The effects on American politics of this increasing resentment of government extravagance and the piling up of taxes are likely to be far-reaching.

Industrial Development in Cochin.

The various cottage and allied industries started by the State or with State aid were more or less empirical. The facilities granted were found to require re-adjustment with reference to local conditions, heredity and individual tastes. The bell-metal business at Ernakulam and the Hand-Loom Weaving Society at Kuttampalli started with some Rs. 20,000 advanced by the State came to grief before the year was half over. One was wound up and the other had to be transferred to the control of the Co-operative Department. The stoneware factory at Chalakkudi, the construction of which was entrusted to an expert on a salary of Rs. 1,400 per mensem, was to have been completed by October 1921 at a cost of Rs. two lakhs; but the expert was not able to complete the buildings even by the close of the year and the amount stipulated was found to be insufficient. The Cochin Tanneries subsidised by Government were brought into working order and turned out excellent samples of tanned leather during the year, but to make them paying, additional advance from the State Funds in the shape of loans had to be made. The formation of a Paper Pulp Factory had not passed (says the Cochin Administration Report for 1921–22) the stage of negotiations.

Indian Problems and the Science Congress.*

By Sir M. Visvesvaraya, K.C.I.E.

If I were asked to name half a dozen problems of fundamental importance to the country's material prosperity which urgently demand scientific investigation and research, I should have no hesitation in mentioning the following :—

(1) Application of Science to Industry.
(2) Application of Science to Agriculture.
(3) Population and Food Supply.
(4) Low Standard of Living.
(5) Undeveloped Resources.
(6) Untrained Citizens.

A word or two of explanation about each will make clear how intimately bound up these problems are with the larger life of the nation. It must be remembered that, since the close of the War, both in advanced countries of the West as well as in Japan, Science has come to be reckoned as an indispensable aid to *Industry*. In India, however, the progress of science and the preparations for research have not kept pace with the new demands of the fresh industrial aspiration and effort stimulated by the War. No organization for scientific equipment has been attempted since Lord Curzon's days. The practical guidance given to industrialists is very meagre if it exists at all. Industry is the work of the people to be carried on largely by co-operation amongst themselves. Future rapid progress lies in Government encouraging organization and co-operation amongst the people and providing the necessary consultative associations, scientific institutions, banking and other facilities usually afforded in advanced countries. There can be no separate road for this country to reach the goal of industrial development.

The amount of research and experimental work done in *Agriculture* is limited to a few central institutions under the control of the Imperial and Provincial Governments. The results and the example of such work fail to reach the cultivator to anything like the extent which one sees in foreign countries. In the remote villages of Japan, for instance, experiments in rice cultivation are carried on by young men who group themselves into local Young Men's Associations. They are guided in this work by pamphlets and leaflets issued by the Agricultural Department of the Government and by the personal advice of travelling inspectors and experts of that department. In such villages complete statistics of production are maintained, in some cases extending over twenty years, and there is a strenuous resolve among the farmers to watch those figures and improve upon them from year to year. This is the sort of spirit one wishes to see developed in India, the agriculturists themselves doing their experimental work and taking the initiative in all agricultural improvements under the general guidance of central experimental farms and rural agricultural societies.

Taking the *population and food supply*, it is well known that quite 100 million out of a total population of 320 million of this country live in a state bordering on destitution. Quite 75 per cent of this total again are housed in mud huts with thatched roofs. Dr. Gilbert J. Fowler in his suggestive address at the last year's Congress pointed out that "for the bulk of the population the provision of a more ample and nutritious diet would seem to be the most important sanitary problem" and he endorsed the opinion of a scholar in economies that "the country cannot make progress in any way while such a state of affairs continues." Is it not possible by better organization and in particular by the application of science, to remedy this shortage of food supply ?

Arising from the last problem comes the *low standard of living* with its concomitant evils of low resistance to disease and low expectation of life. In this connection an American writer, Mr. Price Collier, at the end of a tour through India has stated that the poorer Indian population had squeezed and sifted life's necessities down to the vanishing point. "A handful of rice, a thimbleful of water and a loin-cloth" sufficed for their needs. The average expectation of life in India is in consequence less than 25 years as against 45 or more in European countries. This, like the previous problem, is due to poverty. Poverty is a preventable disease and India's poverty is mainly due to her undeveloped resources and untrained population.

At the root of all these problems perhaps lies the question of *undeveloped resources*. New resources are not opened up fast enough and the full utilization of existing resources

* Part of Presidential Address delivered at the Tenth Indian Science Congress, January 1923.

is retarded through lack of trained workers due to insufficient education in the country. A few months back a correspondent writing to the London "Times" lamented the undeveloped condition of India's natural resources and her industries and added that the natural products of the soil, though lying dormant for generations, are capable of yielding large and profitable returns "to those who have the courage to leave the old and beaten paths." In a country where famine is an annual occurrence, only 36 per cent of the land available for cultivation is under tillage, the yield of wheat per acre is only two-thirds of what it is in the United Kingdom, the average yield of rice crop per acre is only half of what it is in Japan, and of sugar one-fourth of that in Java ; and again only 18 million tons of coal are mined out of a possible 79 million available annually ; the annual production of timber is only half or one-third of what could be exploited, and upon the principle of bringing coal to Newcastle—India is importing large quantities of timber. There is ample scope for extension of irrigation, for increase of hydro-electric power, for extension of railways, the development of shipping and harbours besides illimitable possibilities for industrial development in a country teeming in vast masses of half employed population and enormous stores of raw material.

The lack of elementary education is another great handicap in this country, barely more than 6 per cent of the population being able to read and write while even in Japan already over 90 per cent are literate. I could quote figures to show that the practical and technical education available is negligible. The question is : Can these deficiencies be made good as reasonably early as is desirable by the present methods ? We make plans and take pains to raise healthy cattle, to improve the breed of wheat and cotton but the future citizen in his most impressionable years is allowed to grow up to manhood, poorly equipped both mentally and physically, to fight life's battles.

The sciences concerned in the solution of these giant problems are engineering, agriculture, education and economics. I wish to draw attention to the fact that, with the exception of agriculture, none of these is taken up by this Congress although all of them are most essential, and all are included in the activities of the British Association for the Advancement of Science. I may add that the subject of "Training in Citizenship" formed a specific subject of research by a committee of that association in 1921.

What we want is a policy in all these matters based on world experience—a policy approved both by the people and the Government—to regulate our affairs and activities to the best advantage of the nation. It will enable Government, for instance, to maintain a sense of proportion in the amount of attention they should give to research in each of the various sciences just mentioned. It will help the leaders of the people and the educationists to regulate the university and school population engaged in the study, research or the practical application of these sciences. I have stated that the development work was retarded by lack of workers. Our colleges, for instance, barely turn out 100 graduates a year in mechanical engineering for the service of a country where a population of 320 millions has to be supported. Even now there does not exist a single college in the whole of India which has begun to give a full course of training in the highest grades of electrical engineering. Lack of such policy has meant chaos or drift in the past.

We want vision, we want enterprise and we must abandon "the old and beaten paths" which have paralysed effort in the past. It is now for the Congress to consider what practical action it should take regarding the further development of the Congress itself and the representations it should make to the Government to do their share of the work for the scientific equipment which the country needs. A future Congress should be able to suggest scientific remedies to all the ills referred to and the suggested Advisory Council of Government should advise practical action. The Congress will do the scientific work without prejudice of bias ; the Advisory Council will formulate practical remedies. The one body will show what is theoretically possible and the other what may be practically expedient. The Congress should also keep touch with the associations and institutions engaged in similar activities abroad. This will help the country with ready made solutions to many a problem, and prevent the duplication of work now occasioned by our failure to study experience outside India.

An answer to a question put in the Madras Legislative Council at a recent sitting shows that there are 20 soap factories on the west coast of Madras and about 15 others in other Madras districts.

Mandates under the League of Nations.

The colonizing activities of Europe may be said to have reached their zenith in the 19th century. It is true that centuries earlier Spain had formed colonies in South America which, however, with the decline of the mother-country achieved their independence about the time when other colonies were growing vigorous. It is also true that the colonists had already become so firmly established in North America as to be able successfully to resist the armies of England and that Canada had been the scene of a struggle for supremacy between England and France. But the greater part of Africa was still a land of mystery. England first appeared in South Africa in 1795, not as a colonizing power but to guard the route to India and though the Dutch settlements were much earlier they had not yet penetrated far in the interior. Australia was unknown. China and Japan were practically closed to European enterprise; India was under the precarious rule of a trading company and the Near East was merely an emporium of trade.

At or about the same time there was a great expansion of trade, due largely to the discovery of steam and the invention of machines. The whole outlook upon trade underwent a change and from a position of inferiority amounting almost to contempt it rose to a great and honourable status to which men were attracted by the desire to increase their wealth and in which it came to be recognized that the great prizes were to be won. As trade thus expanded and wealth increased it came about by an inevitable evolution that the stronger and more civilized races thrown into contact with primitive tribes and barbarous customs should assert their superiority and should gradually assume the control of the various countries.

And this again led to the almost universally accepted doctrines that the weaker (and especially the black man of Africa), was born to serve and even to be a slave to the stronger! The doctrine was supported by arguments drawn from the ancient Jewish scriptures that the servitude of the uncivilized races was a divine ordinance and by the more practical contention that the slave was better off under a master than in freedom. Slavery was not abolished in South Africa until 1834; its abolition was the immediate cause of the emigration of the Boers into the Transvaal and by the resentment which it caused was not without influence in bringing about the war of 1899. In North America so strong was the opposition to the doctrine of the natural right of man to his freedom that for nearly 40 years there was a fierce fight between abolitionists and slave-holders which culminated in 1861 in the great War of Secession. Yet the slave holding party honestly believed that slavery was a just, necessary and even humane institution without which the country must perish and black men and white alike be ruined.

In 1814 when the Congress of Vienna assembled to recast the map of Europe after the Napoleonic wars, there was no thought of consulting the wishes of the people concerned. Thrones were restored to monarchs who had lost them and countries were divided up or joined together to suit diplomatic convenience. Even so great a wrong as the partition of Poland remained unredressed. How then could it be expected that the men of those times who had not even attained to the recognition of popular rights in Europe should have been concerned to consider those rights in regions where the superiority of the colonists was almost an axiom? This slight sketch of a few salient features must suffice to shew that the gradual awakening of men's minds to the rights of uncivilized communities in their native soil has been a slow evolutionary process. The corporate mind of men assimilates new ideas only with difficulty and is equally loath to part with the old established order. Consequently when at the close of the Great War the system of Mandates was enunciated, not only did it arouse considerable doubt and suspicion but it was hardly grasped even by the men who had invented or adopted it. Yet it marks a very distinct advance upon the ideas of the previous generation, for it recognizes the new principle that the more backward parts of the earth exist primarily for their native inhabitants, thus radically altering the relations between the colonial immigrants and the indigenous population.

It is very important to bear these facts in mind, because the League of Nations has been accused of supporting a system which it hypocritically describes as the sacred trust of civilization but which for that very reason is merely annexation in a more objectionable form. Who, it is said, ever asked civilization to undertake this sacred trust? Why cannot the League leave these unfortunate barbarians alone to enjoy life in their own way? The League of Nations has thought fit to adopt this

new system because it is dealing not with an ideal world but with a very practical one; it would indeed merit censure if it made provisions upon a hypothesis which all the world knows to be false. It must take human nature as it finds it and proceed upon the assumption that it neither is nor ever will be perfect and it has adopted Mandates not as an ideal system but as the best that can be devised to meet existing conditions.

In doing this it is charged with ministering to the greed of Europe. This charge is unfair. Though there are many unpleasant chapters in the history of colonization, Europe has only done, ever on the worst construction, what every nation has equally done when she has had the strength and the opportunity. She has taken possession of countries which did not belong to her and has administered them for her own benefit. That is what the Moors did when they invaded Spain, the Turks when they took Constantinople, Timur and Baber when they conquered India and to a certain extent the Japanese when they were masters of Korea. That is what the Hindu princes did to one another in the ancient days and what the Mahrattas attempted to do when they expanded beyond Maharashtra. To accuse Europe of greed or at any rate to impute to her a monopoly of the vice, to accuse the league of supporting her in that vice, is to arrogate to oneself as a peculiar possession that very mental attitude which was only brought into being when the Treaty of Versailles was being discussed.

What then is the Mandate system? and how does it differ from the ordinary annexation? The Covenant itself describes it in general terms in article 22. It is recognized that there are certain backward peoples who are "not yet able to stand by themselves in the strenuous conditions of the modern world," in other words, who would be unable themselves to resist encroachment or even to maintain settled order. It is therefore laid down that "the well-being and development of such peoples form a sacred trust of civilization," and this trust is to be fulfilled by a selected nation who shall be responsible to the world's tribunal for good and humane administration.

Mandates are divided into three categories, known technically as A, B, and C and all are subject to the general control of the League. The A mandates are granted for countries which are sufficiently advanced that complete independence may be contemplated in their near future, *e.g.*, Syria, Palestine and Mesopotamia. The B mandates are those which concern wholly backward territories in Africa, in which there is no reasonable chance that the inhabitants can govern themselves for many years to come and which are sufficiently large and populous to be treated as separate units, *e.g.*, the Cameroons (formerly German colony), German East Africa and Togoland. The C mandates are intended for those countries which being unable to govern themselves are either too small or scattered or else too thinly peopled to justify separate administration and these are incorporated with the Mandatory nation as an integral part of itself, *e.g.*, the island of Samoa of the one kind and German South-West Africa of the other. Mandates have been granted and accepted by Great Britain for Palestine, Mesopotamia, Tanganiyika (German East Africa), and a small part of the Cameroons. To France have been allotted Syria, Togoland, and the greater part of the Cameroons to New Zealand, Samoa, and to the Union of South Africa, German South-West Africa. The scattered islands of the Pacific formerly belonging to Germany have been divided between Japan and Australia. Every Mandate is drafted in the first instance by the Mandatory Power but has to be submitted to the League for approval and criticism. Except in Palestine where the clauses relating to Jewish immigration are peculiar, the main principles of all these Mandates are the reduction of armed forces to the minimum required for internal order, the guarantee for all the religious beliefs and sacred places and equality of trading facilities and taxations for all member States of the League.

The control of the League is exercised through the Permanent Mandates Commission set up by the Covenant under the last clause of Article 22, by whom is examined the report to the League of each Mandatory State on the execution of its trust. At present the principal objection to this Report is that there is no machinery for an independent check. The Mandatory Power in pleading its own cause naturally makes out the best case for its administration and the more backward races probably do not know how or to whom to appeal in cases of discontent. It has therefore been suggested that the League should possess a staff of international inspectors who would keep the League in direct touch with the Mandate territory and furnish information and criticism independently of the Mandatory's report. The right of petition was however

discussed by the Third Assembly. The principle was admitted by every one but there was some difference of opinion on the point, whether such petitions should be sent direct to the Permanent Mandates Commission or to the Mandatory State. Ultimately it was resolved that petitions from the inhabitants should be sent to the Permanent Commission through the local authorities and the Mandatory State and that any other representations would not be considered until the Mandatory State had full opportunity to express its views. Meanwhile the Permanent Commission has prescribed a series of questions which should prevent the suppression of awkward facts and should enable it to judge of the general course of the administration. These questions are not exhaustive; they might be improved by a more special reference to the welfare of the natives, but they have not been long in existence and no doubt will be modified as experience suggests. The most detailed report hitherto submitted, that of the French in the Cameroons, has shown signs that the necessity of reporting to the League even in the present imperfect conditions is not without influence on the administration.

The Mandate system thus differs from annexation in various ways. The annexing country exercises full sovereign rights over the annexed territory. It may train troops not merely for Police purposes, but for its own defence and even for its own aggressive enterprises. I may favour one religion and prosecute or depress another; it may treat the holy places of an alien religion with contempt or visit them with sacrilege. It may establish protection for its own trade or unduly favour that of any nation. Finally, the most important of all it may oppress the people over whom it rules, not necessarily from sheer perverse cruelty but because it has entertained peculiar notions of the proper way to treat the native races. The Mandate tries to prevent these things by imposing certain obligations upon the Mandatory State and by requiring that it shall submit an account of its doings to the judgment of the civilized world.

It is not to be denied that the Mandatory State does obtain certain privileges which must naturally flow from any system of the kind. The language of the administration must to a large extent be the language of the Mandatory with the consequence that the natives look first to the Mandatory State and learn its institution. Trade follows the flag and India herself shows how it naturally grows between those countries which are most intimately connected. But to say as some have said that this country or that must "keep" mandated territory because it produces oil or coal, to surrender part of such territory to a foreign Power or to suggest that a colony of foreigners may be established in it without regard to the wishes of the inhabitants is to show a gross misconception of the nature of a Mandate. It is misconceptions such as these and they have been entertained not only by private individuals but influential newspapers and even by Governments—which give colour to adverse criticism and at the same time show the confusion of thought that still surrounds the Mandate principle.

The *system* as has been remarked is not ideal; it is an attempt to advance towards the ideal; it is a notable advance in thought in that it recognizes the paramount importance of the rights of the natives and of their welfare to an extent our fathers would have called Utopian folly, the unsubstantial dreaming of enthusiasts.

The October number of the "Labor Gazette," a monthly published by the Labour Office Secretariat, Bombay, reveals an appalling state of overcrowding in that City. The Indian Industrial Commission referred particularly to the problems presented by the lack of housing facilities for industrial labor in Bombay; and recommended certain special measures. It is not known what action has been taken on these recommendations, but the conditions in Bombay should serve as an object lesson to other cities which are being industrialised. 13.7 per cent of the population of Bombay live in rooms with ten persons and over; 22.1 per cent in rooms with 6 to 9 persons; and 64.2 persons in rooms with 5 persons and under. The industrialization of any area without adequate housing and welfare facilities for the population, drawn there as the result of the growth of industries, cannot but be productive of extremely harmful results. While 70 per cent of the total tenements in Bombay are one-room tenements and 66 per cent of the total occupants live in such tenements, the corresponding percentage of one-room tenements and their occupants in London in 1911 were 13 and 6. In overcrowding at least, Bombay holds the palm.

Aims and Ideals of Viswa-Bharati.

By Dr. Rabindranath Tagore.

India has her renaissance, she is preparing to make her contribution to the world of the future. In the past she produced her great culture, and in the present age she has an equally important contribution to make to the culture of the New World, which is emerging to the wreckage of the Old.

This is a momentous period of her history, pregnant with precious possibilities. Being strongly impressed with the need and the responsibility, which every individual to-day must realize according to his power, I have formed the nucleus of an International University in India, as one of the best means of promoting mutual understanding between the East and the West. This institution, according to the plan I have in mind, will invite students from the West to study the different systems of Indian philosophy, literature, art and music in their proper environment, encouraging them to carry on research work in collaboration with the scholars already engaged in this task.

The Western Universities give their students an opportunity to learn what all the European peoples have contributed to their Western culture. Thus the intellectual mind of the West has been luminously revealed to the world. What is needed to complete this illumination is for the East to collect its own scattered lamps and offer them to the enlightenment of the world.

Asia's Duty.

There was a time when the great countries Asia had each of them, to nurture its own civilization apart, in comparative seclusion. Now has come the age of co-ordination and co-operation. The seedlings that were reared within narrow plots, must now be transplanted into the open fields. They must pass the test of the world market, if their maximum value is to be obtained.

But before Asia is in a position to co-operate with the culture of Europe, she must base her own structure on a synthesis of all the different cultures which she has. When, taking her stand on such a culture, she turns toward the West, she will take, with a confident sense of mental freedom, her own view of truth from her own vantage-ground, and open a new vista of thought to the world. Otherwise, she will allow her priceless inheritance to crumble into dust, and trying to replace it clumsily with feeble imitations of the West, make herself superfluous, cheap and ludicrous. If she thus loses her individuality and her specific power to exist, will it in the least help the rest of the world? Will not her terrible bankruptcy involve also the Western mind? If the whole world grows at last into an exaggerated West, then such an illimitable parody of the modern age will die, crushed beneath its own absurdity.

In this belief, it is my desire to extend by degrees the scope of this University on simple lines, until it comprehends the whole range of Eastern cultures—the Aryan, Semitic, Mongolian and others. Its object will be to reveal the Eastern mind to the East herself and to the rest of the world.

Of one thing I felt certain during my travels in Europe, that a genuine interest has been roused there in the philosophy and the arts of the East, from which the Western mind seeks fresh inspiration of Truth and Beauty. Once the East had her reputation of fabulous wealth, and the seekers were attracted from across the sea. Since then, the shrine of wealth has changed its site. But the East is famed also for her storage of wisdom, harvested by her Patriarchs from long successive ages of spiritual endeavour. And when, as now, in the midst of the pursuit of power and wealth, there rises the cry of privation from the famished spirit of man, an opportunity is offered to the East to offer her store to those who need it.

Once upon a time, we were in possession of such a thing as our own mind in India. It was living. It thought, it felt, it expressed itself. It was receptive as well as productive. That this mind could be of any use in the process, or in the end, of our education was overlooked by our modern educational dispensation. We are provided with buildings and books and other magnificent burdens calculated to suppress our mind. The latter was treated like a library-shelf solidly made of wood, to be loaded with leather-bound volumes of second-hand information. In consequence it has lost its own colour and character, and has borrowed polish from the foreign carpenter's shop. All this has cost us money and also our mind, finer ideas, while our intellectual vacancy has been crammed with what is described in official reports as Education. In fact, we have

brought our spectacles at the expense of our eye-sight.

Ideals in Education.

In India our goddess of learning is Saraswati. My audience in the West, I am sure, will be glad to know that her complexion is white. But the signal fact is that she is living and she is a woman and her seat is on a lotus-flower. The symbolic meaning of this is, that she dwells in the centre of life and the heart of all existence which opens itself in beauty to the light of Heaven.

The Western education which we in this country have chanced to know, is impersonal. Its complexion is also white but it is the whiteness of the white-washed class-room walls. It dwells in the cold storage compartments of lessons and the ice-packed minds of our school-masters. The effect which it had on my mind when, as a boy, I was compelled to go to school, I have described elsewhere. My feeling was very much the same as a tree might have, which was not allowed to live its full life, but was cut down to be made into packing cases.

The introduction of this education was not a part of the solemn marriage-ceremony which was to unite the minds of the East and the West in mutual understanding. It represented an artificial method of training specially calculated to produce the carriers of the white man's burden. This want of ideals still clings to our education-system, though our Universities have latterly burdened their syllabus with a greater number of subjects than before. But it is only like adding to the bags of wheat the bullock carries to market; it does not make the bullock any better off.

Mind, when long deprived of its natural food of truth and freedom of growth, develops an unnatural craving for success; and our students have fallen victims to the mania for success in examinations. Success consists in obtaining the largest number of marks with the strictest economy of knowledge. It is a deliberate cultivation of disloyalty to truth, of intellectual dishonesty, of a foolish imposition by which the mind is encouraged to rob itself. But as we are by means of it made to forget the existence of mind, we are supremely happy at the result. We pass examinations, and shrivel up into clerks, lawyers and police inspectors, and we die young.

Universities should never be made mechanical organizations for collecting and distributing knowledge. Through them the people should offer their intellectual hospitality, their wealth of mind to others, and earn their proud right, in return, to receive gifts from the rest of the world. But in the whole length and breadth of India there is not a single University established in the modern time when a foreign or an Indian student can properly be acquainted with the best products of the Indian mind in a full measure. For that we have to cross the sea, and knock at the doors of France and Germany. Educational institutions in our country are India's alms bowl of knowledge; they lower our intellectual self-respect; they encourage us to make a foolish display of decorations composed of borrowed feathers.

This it was that led me to found a school in Bengal, in face of many difficulties and discouragements, and in spite of my own vocation as a poet, who naturally finds its true inspiration only when he forgets that he is a schoolmaster. It is my hope that an indigenous University of our own land will find its natural growth, a University which will help India's mind to concentrate and to be fully conscious of itself; free to seek the truth and make this truth its own standard, give expression to its own creative genius, and offer its wisdom to the guests who come from other parts of the world.

Loss of Initiative.

Man's intellect has a natural pride in its own aristocracy, which is the pride of its culture. Culture only acknowledges the excellence whose criticism is in its inner perfection, not in any external success. When this pride succumbs to some compulsion of necessity or lure of material advantage, it brings humiliation to the intellectual man. Modern India, through her very education, has been made to suffer this humiliation. Once she herself provided her children with a culture which was the product of her own ages of thought and creation. But it has been thrust aside, and we are made to tread the mill of passing examinations, not for learning anything but for notifying that we are qualified for employments under organizations conducted in English. Our educated community is not a cultured community, but a community of qualified candidates. Meanwhile, the proportion of possible employments to the number of claimants has gradually been growing narrow, and the consequent disaffection has been wide-spread. At last the very authorities who are responsible for this, are blaming their victims. Such is the perversity of human nature. It bears its worst grudge against those it has injured.

There are belated attempts on the part of our governors to read us pious homilies about disinterested love of learning, while the old machinery still goes on working, whose product is not education but certificates. It is good to remind the fettered bird that its wings are for soaring; but it is better to cut the chain which is holding it to its perch. The most pathetic feature of the tragedy is that the bird itself has learnt to use its chain for its ornament simply because the chain jingles in fairly respectable English.

In India, a vague feeling of discontent has given rise to numerous attempts at establishing national schools and colleges. But, unfortunately, our very education has been successful in depriving of our real initiative and our courage of thought. The training we get in our schools has the constant implication in it that it is not for us to produce but to borrow. And we are casting about to borrow our educational plans from European institutions. The trampled plants of Indian corn are dreaming of recouping their harvest from the neighbouring wheat fields. To change the figure, we forget that, for proficiency in walking, it is better to train the muscles of our own legs than to strut upon the wooden ones of foreign make, although they clatter and cause more surprise at our skill in using them than if they were living and real.

But when we go to borrow help from a foriegn neighbourhood we are apt to overlook the real source of help behind all that is external and apparent. Had the deep-water fishes happened to produce a scientist who chose the jumping of a monkey for its research-work, I am sure he would give most of the credit to the branches of the trees and very little to the monkey itself. In a foreign University, we see the branching wilderness of its buildings, furniture, regulations and syllabus, but the monkey which is a difficult creature to catch and more difficult to manufacture we are likely to treat as a mere accident of minor importance. It is convenient for us to overlook the fact that among the Europeans the living spirit of the University is widely spread in their society, their parliament, their literature, and the numerous activities for their corporate life. In all these functions they are in perpetual touch with the great personality of the land which is creative and heroic in its constant acts of self-expression and self-sacrifice. They have their thoughts published in their books as well as through the medium of living men who think those thoughts, and who criticise, compare and disseminate them. But, to our misfortune, we have in India all the furniture of the European University except human teacher. We have, instead, mere purveyors of book-lore in whom the paper-god of the book-shop has been made vocal.

A most important truth which we are apt to forget is that a teacher can never truly teach unless he is still learning himself. A lamp can never light another lamp unless it continues to burn its own flame. The teacher who has come to the end of his subject, who has no living traffic with his knowledge, but merely repeats his lessons to his students can only load their minds; he cannot quicken them. Truth not only must inform but inspire. If the inspiration dies out and the information only accumulates, then truth loses its infinity. The greater part of our learning in the schools has been wasted because, for most of our teachers, their subjects are like dead specimens of once living things, with which they have a learned acquaintance, but no communication of life and love.

University Ideals.

The educational institution, therefore, which I have in mind, has primarily for its object the constant pursuit of truth, from which the imparting of truth naturally follows. It must not be a dead cage in which living minds are fed with food artificially prepared. It should be an open house, in which students and teachers are at one. They must live their complete life together, dominated by a common aspiration for truth and a need of sharing all the delights of culture. In former days the great master-craftsmen had students in their workshops where they co-operated in shaping things to perfection. That was the place where knowledge could become living, that knowledge which not only has the substance and law, but its atmosphere subtly informed by a creative personality. For intellectual knowledge also has its aspect of creative art in which the man who explores truth expresses something which is human in him—his enthusiasm, his courage, his sacrifice, his honesty and his skill. In merely academical teaching we find subjects, but not the man who pursues the subject; therefore the vital part of education remains incomplete.

For our Universities we must claim, not labelled packages of truth and authorized agents to distribute them, but truth in its living association with her lovers and seekers and discoverers. Also we must know that the concentration of the mind-forces scattered

throughout the country is the most important mission of a University which, like the nucleus of a living cell, should be the centre of the intellectual life of the people.

The bringing about of an intellectual unity in India is, I am told, difficult to the verge of impossibility owing to the fact that India has so many different languages. Such a statement is as unreasonable as to say that a man, because he has a diversity of limbs, should find it impossible to realize life's unity in himself, and that only an earth-worm composed of a tail and nothing else could truly know that it had a body.

Let us admit that India is not like any one of the great countries of Europe, which has its own separate language; but is rather like Europe herself, branching out into different peoples with many different languages. And yet Europe has a common civilization, with an intellectual unity which is not based upon uniformity of language. It is true that in the earlier stages of her culture the whole of Europe had Latin for her learned tongue. That was in her intellectual budding time, when all her petals of self-expression were closed in one point. But the perfection of her mental unfolding was not represented by the singularity of her literary vehicle. When the great European countries found their individual languages, then only the true federation of cultures became possible in the West, and the very differences of the channels made the commerce of ideas in Europe so richly copious and so variedly active. We can well imagine what the loss to European civilization would be if France, Italy and Germany and England herself had not, through their separate agencies, contributed to the common coffer their individual earnings.

Foreign Culture and Language.

There was a time with us when India had her common language of culture in Sanskrit. But, for the complete commerce of her thought, she requires that all her vernaculars should attain their perfect powers, through which her different peoples might manifest their idiosyncracies; and this could never be done through a foreign tongue.

In the United States, in Canada and other British colonies, the language of the people is English. It has a great literature which has its birth and growth in the history of the British Islands. But, when this language with all its products and acquisitions, matured by ages on its own mother-soil, is carried into foreign lands, which have their own separate history and their own life growth it must constantly hamper the indigenous growth of culture and destroy individuality of judgment and the perfect freedom of self-expression. The inherited wealth of the English language, with all its splendour, becomes an impediment when taken into different surroundings, just as when lungs are given to the whale in the sea. If such is the case even with races whose grand mother-tongue naturally continues to be their own mother-tongue, one can imagine what sterility it means for a people which accepts, for its vehicle of culture, an altogether foreign language. A language is not like an umbrella or an overcoat, that can be borrowed by unconscious or deliberate mistake; it is like the living skin itself. If the body of a draught horse enters into the skin of a race horse, it will be safe to wager that such an anomaly will never win a race, and will fail even to drag a cart. Have we not watched some modern Japanese artists imitating European Art? The imitation may sometimes produce clever results; but such cleverness has only the perfection of artificial flowers which never bear fruit.

If we were to take for granted, what some people maintain, that western culture is the only source of light for our mind, then it would be like depending for day-break upon some star which is the sun of a far distant sphere. The star may give us light, but not the day; it may give us direction in our voyage of exploration, but it can never open the full view of truth before our eyes. In fact we can never use this cold star-light for stirring the sap in our branches, and giving colour and boom to our life. This is the reason why European education has become for India mere school-lessons and no culture—a box of matches good for the small uses of illumination, but not the light of morning, in which the use and beauty, and all the subtle mysteries of life are blended in one.

Need of Assimilation.

Let me say clearly that I have no distrust of any culture because of its foreign character. On the contrary I believe that the shock of such extraneous forces is necessary for the vitality of our intellectual nature. It is admitted that much of the spirit of Christianity runs counter, not only to the classical culture of Europe, but to the European temperament altogether. And yet this alien movement of ideas, constantly running against the natural mental current of Europe, has been a most important factor in strengthening and enriching her civilization, on account of the sharp

antagonism of its intellectual direction. In fact, the European vernaculars first woke up to life and fruitful vigour, when they felt the impact of this foreign thought-power with all its Oriental forms and affinities. The same thing is happening in India. European culture has come to us not only with its knowledge but with its velocity.

Then again, let us admit that modern science is Europe's great gift to humanity for all time to come. We, in India, must claim it from her hands, and gratefully accept it in order to be saved from the course of futility by lagging behind. We shall fail to reap the harvest of the present age, if we delay.

What I object to is the artificial arrangement by which foreign education tends to occupy all the space of our national mind, and thus kills, or hampers, the great opportunity for the creation of a new thought-power by a new combination of truths ; it is this which makes me urge that all the elements in our own culture have to be strengthened, not to resist the Western culture, but truly to accept and assimilate it ; to use it for our sustenance, not as our burden ; to get mastery over this culture, and not to live on its outskirts as the hewers of texts and drawers of book-learning.

India's Myriad-Lined Culture.

The main river in Indian culture has flowed in four streams, the Vedic, the Puranic, the Buddhist and the Jain. It has its source in the heights of the Indian consciousness. But a river, belonging to a country, is not fed by its own waters alone. The Tibetan Brahmaputra is a tributary to the Indian Ganges. Contributions have similarly found their way to India's original culture. The Mahomedan, for example, has repeatedly come into India from outside, laden with his own stores of knowledge and feeling and his wonderful religious democracy, bringing freshet after freshet to swell the current. To our music, our architecture, our pictorial art, our literature, the Mahomedans have made their permanent and precious contribution. Those who have studied the lives and writings of our mediæval saints, and all the great religious movements that sprang up in the time of the Mahomedan rule, know how deep is our debt to this foreign current that has so intimately mingled with our life.

So, in our centre of Indian learning, we must provide for the co-ordinate study of all these different cultures,—the Vedic, the Puranic, the Buddhist, the Jain, the Islamic, the Sikh, the Zoroastrian. The Chinese, the Japanese and the Tibetan will also have to be added ; for, in the past, India did not remain isolated within her own boundaries. Therefore, in order to learn what she was in her relation to the whole continent of Asia, these cultures too must be studied. Side by side with them must finally be placed the Western culture. For only then shall we be able to imitate this last contribution to our common stock. A river flowing within banks is truly our own, and it can contain its due tributaries, but our relations with a flood can only prove disastrous.

Our Renaissance has come.

There are some, who are exclusively modern, who believe that the past is the bankrupt time, leaving no assets for us but only a legacy of debts. They refuse to believe that the army which is marching forward can be fed from the rear. It is well to remind such persons that the great ages of renaissance in history were those when man suddenly discovered the seeds of thought in the granary of the past.

The unfortunate people who have lost the harvest of their past, have lost their present age. They have missed their seed for cultivation and gone begging for their bare livelihood. We must not imagine that we are one of the disinherited peoples of the world. The time has come for us to break open the treasure-trove of our ancestors and use it for our commerce of life. Let us with its help make our future our own and not continue our existence as the eternal ragpickers in other people's dust-bins.

Personality in Education.

So far I have dwelt only upon the intellectual aspect of education. For, even in the West, it is the intellectual training which receives almost exclusive emphasis. The Western Universities have not truly recognized that fulness of expression is fulness of life. And a large part of man can never find its expression in mere language of words. It must therefore seek for its other languages—lines and colours, sounds and movements. Through our mastery of these we not only make our whole nature articulate, but also understand man in all his attempts to reveal his innermost being in every age and clime. The great use of education is not merely to collect facts, but to know man and to make oneself known to man. It is the duty of every human being to master, at least to some extent, not only the language of intellect, but also that personality which is the language of Art. It is a great world of reality for man—vast and profound this growing world of his own creative nature.

This is the world of Art. To be brought up in ignorance of it is to be deprived of the knowledge and use of that great inheritance of humanity, which has been growing and waiting for every one of us from the beginning of our history. It is to remain deaf to the eternal voice of man that speaks to all men the messages that are beyond speech. From the educational point of view we know Europe where it is scientific, or at best literary. So our notion of its modern culture remains within the boundary lines of grammar and the laboratory. We almost completely ignore the æsthetic life of man, leaving it uncultivated, allowing weeds to grow there. Our newspapers are prolific, our meetings are vociferous; and in them we wear to shade the things we have borrowed from our English teachers. We make the air dismal and damp with the tears of our grievances. But where are our arts, which like the outbreak of spring-flowers, are the spontaneous overflow of our deeper nature and spiritual magnificence?

Through this great deficiency of our modern education, we are condemned to carry to the end a dead load of dumb knowledge. Like miserable outcasts, we are deprived of our place in the festival of culture and wait at the outer court, where the colours are not for us, nor the forms of delight, nor the songs. Ours is the education of a prison house, with hard labour, and with a drab dress cut to the limits of minimum decency and necessity. We are made to forget that the perfection of colour and form and expression belong to the perfection of vitality that the joy of life is only the other side of the strength of life. The timber merchant may think that the flowers and foliage are mere frivolous decorations of a tree; but if these are suppressed, he will know to his cost that the timber too will fail.

During the Moghul period, music and art in India found a great impetus from the rulers, because their whole life,—not merely their official life,—was lived in this land; and it is the wholeness of life from which originates Art. But our English teachers are birds of passage: they cackle to us, but do not sing,—their heart is not in the land of their exile.

Music and Arts.

Construction of life, owing to this narrowness of culture, must no longer be encouraged. In the centre of Indian culture which I am proposing, music and art must have their prominent seats of honour and not be given merely a tolerant nod of recognition. The different systems of music and different schools of art, which lie scattered in the different ages and provinces of India, and in the different strata of the society, and also those belonging to the other great countries of Asia, which had communication with India, have to be brought there and studied in comparison with those of the West.

I have already hinted that education should not be dragged out of its native element, the life current of the people. Economic life covers the whole width of the fundamental basis of society, because its necessities are the simplest and the most universal. Educational institutions, in order to obtain their fulness of truth, must have close association with this economic life. The highest mission of education is to help us to realize the inner principles of the unity of all knowledge and all the activities of our social and spiritual being. Society in our early stage was held together by its economic co-operation when all its members felt in unison a natural interest in their right to live. Civilization could never have been started at all if such was not the case. And civilization will fall to pieces if it never again realizes the spirit of mutual help and the common sharing of benefits in the elemental necessaries of life. The idea of such economic co-operation should be made the basis of our University. It must not only instruct, but live; not only think, but produce.

Our ancient Tapovanas, or forest schools which were our natural Universities, were not shut off from the daily life of the people. Masters and students gathered fruit and fuel and took their cattle out to graze, supporting themselves by the work of their own hands. Spiritual education was a part of the spiritual life itself, which comprehended all life. Our centre of culture should not only be the centre of the intellectual life of India, but the centre of her economic life also. It must co-operate with the villages round it, cultivate land, breed cattle, spin cloths, press oil from oil-seeds; it must produce all the necessaries, devising the best means, using the best materials, and calling science to its aid. Its very existence should depend upon the success of its industrial activities carried out on the co-operative principle which will unite the teachers and students and villagers of the neighbourhood in a living and active bond of necessity. This will give us also a practical industrial training whose motive force is not the greed of profit.

Along with this, there should be some common sharing of life with the tillers of soil and the humble workers in the neighbouring villages;

studying their crafts, inviting them to the feasts, joining them in works of co-operation for communal welfare ; and in our intercourse we should be guided, not by moral maxims or the condescension of social superiority, but by natural sympathy of life for life and by the sheer necessity of love's sacrifice for its own sake. In such an atmosphere students would learn to understand that humanity is divine harp of many strings, waiting for its one grand music. Those, who realize this unity, are made ready for the pilgrimage through the night of suffering and along the path of sacrifice, to the great meeting of man in the future, for which the call comes to us across the darkness.

Life, in such a centre, should be simple and clean. We should never believe that simplicity of life might make us unsuited to the requirements of the society of our time. It is the simplicity of the turning fork, which is needed all the more because of the intricacy of strings in the instruments. In the morning of our career our nature needs the pure and the perfect note of a spiritual ideal in order to fit us for the complications of our later years.

In other words, this institution should be a perpetual creation by the co-operative enthusiasm of teachers and students, growing with the growth of their soul, a world in itself, self-sustaining, independent, rich with ever renewing life, radiating life across space and time, attracting and maintaining round it a planetary system of dependent bodies. Its aim should lie in imparting life-breath to the complete man who is intellectual as well as economic bound by social bonds, but aspiring towards spiritual freedom and final perfection.

Japla Cement Works.

A new Cement Works was recently opened by His Excellency Sir Henry Wheeler, Governor of Bihar and Orissa, at Japla in the Palamau Division of that province, in the presence of a distinguished assembly.

The Governor was welcomed by Sir Rajendra Nath Mookerjee, the Chairman of the Company, and after the Vice-Chairman had given a short account of the inception and development of the scheme and of the processes of manufacture, His Excellency pressed an electric button and started the plant. A tour of the Works was then made, each department being visited in turn and each process explained. His Excellency was much impressed by the completeness of the mechanical appliances which are such that from the time when the raw materials enter the first mill until the moment when the finished cement has been automatically filled into the sack, and the latter is ready for trying and loading into the Railway wagon, they are absolutely untouched by human hands.

The Company has already spent more than 80 lakhs upon the Works, which are capable of producing 60,000 tons of the highest grade Portland Cement per annum, and are more particularly intended to supply the Bengal market. The milestone comes from a quarry 5 miles distant, whence it is carried by ropeway across the river Sone into the Works which are situated on the eastern bank of that river and are linked up with the Daltonganj Branch f tohe East Indian Railway by a siding 3 miles long. The shale is brought by rail from Daltonganj. The machinery chosen was almost entirely made in England and erected on the site under the supervision of skilled Engineers in the service of the Engineering Firms who made it. The rotary kiln is 200 feet long and provision has been made for a second kiln of similar dimensions which will be added as soon as the demand warrants the extension. The power plant is of the latest type, the two Turbo-Generators having a combined output of 1750 kilowatts and were built by Richardson-Westgarth, whilst the 3 boilers are by Babcock & Wilcox. The kiln and all the grinding machinery has been supplied by Newells. The ropeway was supplied by British Ropeways, Ltd.

In addition to the very substantial buildings in which the machinery is housed, there are a fine laboratory, large repair shops, stores hospital and ample residential accommodation for the staff of all ranks. An unlimited supply of good water is got from the river, and filtered before distribution.

The Company sought and obtained the co-operation of the Associated Portland Cement Manufacturers, Ltd., of London in the selection of the site and raw materials and in the designing of the plant and some of the Directors of that Company, which is the largest cement manufacturing concern in the world, have joined the Board, which thus combines the widest Indian experience with the technical knowledge and skill of the proprietors of the best-known English brands of cement on the Indian market.

University Extension Lectures.

By "Scrutator."

We have so often been asked by our readers about the aim and scope of University Extension Lectures. The circumstances under which these Lectures have come to occupy an important place in the work of modern Universities have to be fully grasped before the function they fulfil can be understood. The whole subject has been dealt with in books dealing with the older Universities of England and to these, more especially to the shorter *History of the University of Cambridge* by Bass Mullinger we would urge attention on the part of those interests in this subject. We are much indebted for what is set down here. It will be seen that the movement has made a remarkable progress during the half century it has been in existence. Only one aspect of it has been copied in India and the movement is bound to go forward if properly seconded by thinking men at the various Indian Universities.

The University Extension Movement originated in a course of lectures delivered in 1867 by Professor James Stuart to women in Liverpool, Manchester, and Sheffield. The lectures were first delivered in connection with a Society then recently started, called "The North of England Council for the Higher Education of Women," the President of which was Mrs. Josephine Butler, and the Secretary Miss A. J. Clough. The subject was "Natural Philosophy," and the lectures were eight in number. These were followed by a course by the same lecturer at Crewe in 1868, and a third course at Rochdale. Syllabuses were given out, to which weekly papers of questions were appended, the written answers being examined and corrected by the lecturer. The experiment was attended with signal success. The women who joined the classes in 1867 were in all about 600; and the workpeople at Crewe about 500 to 800; those at Rochdale about 1,000. Other courses, on Meteorology and Political Economy, followed, in which Professor Stuart was aided by Mr. T. Aldis and Mr. L. Cumming. These courses were held in the same four towns, or sometimes in connection with different groupings of towns. In 1871 the success of the movement had become so evident that certain gentlemen at Nottingham (Mr. R. Enfield, the Rev. F. Morse, the Rev. J. B. Paton) were induced to place themselves in communication with Professor Stuart on the subject. His observations had already suggested to him the necessity of ensuring continuity of effort in order to render success permanent, and the desirability, for that purpose, of forming a sort of "Peripatetic University"; and eventually four memorials (from the West of England Council, the Co-operative Society at Rochdale, the workmen at Crewe, and the Committee at Nottingham), together with a fly-sheet drawn up by Professor Stuart, were forwarded to Cambridge. The ground taken by the memorialists assumed that education, as carried on at the Universities, is not necessarily restricted to high and abstruse subjects alike; that although in its completeness the University curriculum calls for the devotion of the whole time and energies of the student, there is no reason why a less amount of the knowledge and mental discipline which is thus offered should not also prove highly useful when brought withing the reach of those who cannot attain to these advantages by residence in the University; and finally, that it is a matter of national importance that such instruction should be so brought within the reach of all classes. As the result of these memorials a Syndicate was appointed by the Senate to take the whole matter into consideration. They ultimately recommended that the scheme proposed should receive a probationary trial for three years; and as the result three lecturers were appointed, the Rev. V. H. Stanton, Mr. Birks, Mr. T. O. Harding, to lecture at Derby, Nottingham and Leicester. After this the utility of the movement and its success seemed to be placed beyond doubt, and the Extension Lectures have developed into what has been described as "itinerant teaching organization," connecting the chief centres of our higher education with the nation at large. By this means it has been sought to educate the adult as well as the young; to bring instruction home to those whose avocations preclude their gaining it in the busy hours of the day; and not merely to provide the instruction, but systematically to superintend it, and to test its value by regularly ascertaining the results. That these aims have corresponded to a real and widespread want is sufficiently proved by the extent to which individuals of all classes of Society have availed themselves of the advantages thus held out.

Although mainly designed for adults, the lectures have, in many places, been largely attended by the senior pupils in schools, especially in girls' schools ; while young people who have recently left school, ladies, persons of both sexes engaged in business, artisans and labourers, have all, in greater or less proportion, been represented in the classes, and in some instances an enthusiasm has been excited greatly beyond the most sanguine expectations of the lecturers themselves. So early as the year 1877 the present Bishop of Chester (Dr. Stubbs) augured "very great things" from the movement if it were only conducted "on sound principles, apart from party organization, and in the hands of competent teachers" ; and it may safely be asserted that the success since realized has been largely owing to the strict observance of those principles.

The genuine character of the work is attested by the manner in which the other Universities have followed the example thus set. The University of Oxford has adopted a like scheme on independent lines. The London Society for the Extension of University Teaching is a direct offshoot from the Cambridge scheme. The University of Durham has, at its own instance, been associated with the Cambridge in the work carried on in the North. The Universities of Glasgow and Victoria, and the three local colleges in Wales, have initiated corresponding organizations. While Firth College, Sheffield, and University College, Nottingham, owe, in a great measure, their existence to the desire for higher education thus awakened. It may also safely be asserted that the experience gained since the commencement of the movement has been of the highest value in relation to the theory and practice of education, and it has not been without a reflex influence on the work of the Universities themselves. Foremost among these results, we must place the development of a special method. The lectures have generally been delivered once a week, and the adoption of a printed and inter-leaved syllabus has now become an almost invariable rule. The learners have thus been furnished with an outline, to which they have been able to add their own notes from the lecture. At the foot of the outline of each lecture, questions have been appended, and the written work in answer to these has supplied, at the conclusion of the following lecture, the subject matter for a conversation class,—the instruction of the previous week being thus driven home in a less formal but not less effective manner. In the opinion of the most experienced lecturers, indeed, this portion of the work constitutes the most vital part of the system.

Another feature is the improved method which has gradually obtained of conducting the examinations. In order, as far as possible, to check the practice of cramming, no student is permitted to enter for the examination whose work with the lecturer has not reached a certain standard of merit. The result of the examination has also invariably represented the two-fold impression of the lecturer and of the examiner. It has been the practice for the former to send in an alphabetical list, distinguishing by an asterisk the names of those who have done good work on the weekly papers ; while the latter has drawn up a corresponding list, placing an asterisk against the names of those who have acquitted themselves most creditably in their work on his independent examination paper. The order of merit has then been finally decided by a comparison of the work of those whose names are thus distinguished in both lists. It can hardly be doubted that the general adoption of a like plan would go far towards preventing those disheartening failures which sometimes almost suffice to produce a feeling of mistrust with respect to examinations altogether.

A further development of the whole scheme has recently received the sanction of the Queen in Council, whereby students at an affiliated lecture centre are placed on the same footing as students at an affiliated college; so that those who have passed through a continuous course of study extending over three years, together with certain prescribed examinations, will be excused the Previous Examination at Cambridge, and be admitted to a tripos or degree examination after two years' residence. In the session 1885-86 over eight thousand students attended the lectures at about fifty centres. In March 1887, a largely attended Conference was convened at Cambridge to discuss the question of affiliating these centres to the University, together with other matters. The Conference assembled in the Senate House ; and the Vice-Chancellor (Dr. Taylor), open the proceedings. The Marquis of Ripon instituted a felicitous contrast between those mediæval times when "there was gathering round this University, a vast multitude of poor students who came from various parts of the country," and the present day, when we see the University "endeavouring to take its best teaching into every part of the country, to the homes of the people."

Agriculture and Fisheries in Travancore, 1920-21.

By "Rusticus."

The Report on the work of the Agricultural and Fisheries Department of the Travancore State for 1920–21 is a record of a year of quiet but steady progress. It is also a record of a number of miscellaneous activities for, as we have remarked more than once, the Travancore Department has perhaps a double measure of the tendency common to all Agricultural Departments in India, we mean the tendency to an undesirable dissipation of energy. Provided diffusion of energy does not degenerate into dissipation, it is to be encouraged. For the Agricultural Department must ever be up and doing. It must proceed by the method of trial and error, for one lucky shot, the introduction of a new crop such as groundnut or of a new variety of an old crop such as Punjab 4F, may mean an accession to the wealth of a Province or State which will far more than pay the whole cost of the Department for a generation. We have spoken of a lucky shot but it would be more correct to speak of a well-aimed shot for there must be skill and knowledge behind the aim if the shot is to reach its mark. We hardly think that skill and knowledge are apparent in the effort to introduce cotton into Travancore. We are told that the abnormal rise in the price of cotton goods induced ryots in several parts of the State to undertake the cultivation of cotton. The Department would have done well to discourage or, at any rate, to ignore this movement for climatic and other conditions in Travancore are certainly not favourable to the cotton plant, but, instead of doing so, it obtained some Cambodia seed and distributed it in small quantities. The result was what might have been expected. It was found that there was only a very limited scope for cotton cultivation and that even in those parts of the State, Shencottai and South Travancore, in which climatic conditions were not entirely adverse, most of the suitable land was already under paddy and the policy of replacing a food crop such as paddy by a commercial crop such as cotton was one of doubtful expediency. It is now proposed to conduct experiments to ascertain the relative merits of the two crops. The point we have endeavoured to make is that this should have been done before and not after the Department had distributed cotton seed.

Sugarcane is a crop which stands on a different footing. It is not a new crop in Travancore though it has never been grown on an extensive scale. But there is no reason why it should not be grown with profit in parts of Travancore. If, however, it is to be satisfactorily demonstrated that it can be so grown, the Agricultural Department will have to carry out experiments on a far larger scale than it is doing at present. 'With a view to see if sugarcane can be cultivated profitably in rotation with paddy on wet lands commanded by the Kothayar Project in South Travancore, half an acre in the Paddy Farm at Thrippathisaram were planted with sugarcane. The crop was still in the ground when the Report was written but so far it was promising. If the result is satisfactory, it is proposed to induce ryots to cultivate sugarcane in rotation with paddy on wet lands, especially at the tail ends of channels where there is difficulty of supplying sufficient water for paddy cultivation.' We venture respectfully but most emphatically to differ from Dr. Kunjan Pillai as to the value of an experiment of this character carried out on half an acre of land. If the ryots in the neighbourhood of the Thrippathisaram farm are willing to take up the cultivation of paddy on the strength of this experiment, their confidence in the recommendations of the Agricultural Department is such as Agricultural officers elsewhere must envy. Again, the lands along the foot of the hills in the Shencottai taluk are considered suitable for sugarcane, if they are irrigated from wells. Sugarcane has not yet been tried there and in order to demonstrate its advantages (the word is Dr. Kunjan Pillai's), 1 acre in Puliyara 'pakuthy' has been planted with cane. Surely the better plan would have been to plant up plots in various parts of the 'pakuthy.'

The smallness of the scale on which the Travancore Agricultural Department carries out its experiments is equally apparent in the case of coconuts. On the experimental farm at Trivandrum, the manurial experiments have been carried out on ten and thirty-three trees only, at Thiruvella on fifty trees, and at Sherthalai on a hundred trees. Cultivation of the soil round coconut trees has been tried in a garden containing forty trees at Pamalai and on the coconut farm at Oachirai which had 131 trees in bearing at

the close of the year. But, notwithstanding the exiguous scale on which these trials have been made, there can be little doubt that they have shown conclusively the advantages of manure and cultivation. The number of nuts from the hundred trees at Sherthalai has increased in six years from 2309 to 6812 whilst the yield obtained from the cocoanut farm at Oachirai during the year under review was 3446 against 1999 the previous year. We note, however, that the age of the trees, a factor of great importance, is not mentioned.

The most valuable work which is being done by the Travancore Agricultural Department is on the paddy crop and the centre for this is the paddy farm at Nagarcoil. The manurial experiments during the year under review both with oil-cakes and with green leaf and nitrogenous fertilizers confirmed the results obtained in previous years. This is satisfactory as it means that the Agricultural Department can go ahead with confidence in its recommendations to cultivators. Groundnut cake and castor cake again proved more efficient manures than other oil-cakes and it was again shown that the best, though not the most economical, mixture of green manures and nitrogenous fertilizers for plots 6.5 cents in area was 280 pounds of green manure, 17 pounds of ammonium sulphate and 9 pounds of superphosphate. This, as we have said, is not the most economical mixture, for the decrease in yield when half the quantity of green manure and ammonium sulphate used is so small as to make the application of heavier doses not worth the extra cost involved. The Department has yet to discover the best distance at which to transplant its single seedlings. Transplantation nine inches apart gave the best yield last year, 2,518 pounds to the acre against 2,401 pounds, when the seedlings were twelve inches from each other, whereas, the year before, transplantation twelve inches apart gave the highest outturn. It has, however, now been established that the choice lies between nine and twelve inches as the experiments have gone on long enough to show that both these distances are superior to either four or six inches. All over India, the Agricultural Departments are endeavouring to discover the most economical way in which to use water and the Travancore Department has now commenced some interesting experiments in this direction, at Nagarcoil. Of the two plots of equal area and equal value selected for the purpose, one was irrigated once in six days to the depth of three inches and the other when the land was completely dry, the first plot being irrigated eleven times during the season and the other six times. The advantage rested with the former. Demonstrations of the advantages of using better seeds, better implements and better manures for the cultivation of paddy were carried out in seventeen villages in seven taluks and the results should have proved convincing to the ryots for the increase in yield over that from plots cultivated in the ordinary way varied from 20 pounds to 1,526 pounds per acre and averaged 502 pounds. It is worthy of mention that the average cost of the manure applied per acre was less than a rupee, about half that of the manure ordinarily used.

There is very little to record about other crops. A pepper farm was opened at Koni at the end of 1919–20. A suitable site has yet to be found for the proposed fruit farm in South Travancore and meanwhile the Department is doing the best it can for fruit on the other farms.

Throughout 1920–21, the rise in the prices of agricultural implements continued to handicap the efforts of the Travancore Agricultural Department to spread their use. Climax and Meston ploughs are very popular in Travancore but are at present beyond the means of most ryots. This being so, the only thing to be done is to encourage the use of improved ploughs of local manufacture and fifty of these were purchased and distributed during the year. These ploughs are however better suited to the sandy soils of the coastal taluks than to the heavy soils of the interior taluks. The Department has experimented with the Fordson tractor for ploughing and disc harrowing. Dr. Kunjan Pillai expresses no definite opinion as to the results of these experiments but we are surprised to learn that some ryots have expressed a desire to purchase tractors for their own use for they would appear far more adapted to the wide stretches of alluvial soil in Northern India than to the stiff soils of the hills and valleys of Travancore. The average cost of ploughing worked out at Rs. 5 per acre for punja lands, Rs. 6½ for double cropped wet lands and Rs. 14 for hard laterite lands. That of disc harrowing worked out at Rs. 2¾ per acre.

We have continuously urged that if an Agricultural Department is to convince ryots of the superiority of its methods to theirs, it must carry out its demonstrations on their

lands. We are glad to note that the Travancore Department is fully alive to the wisdom of this policy. It supplies ploughs, manures and seeds for its demonstrations but the labour is provided by the ryots. We see no reason to differ from Dr. Kunjan Pillai in his view that the sales of manures to the value of Rs. 65,000 during the year and the distribution of 15,000 pounds of selected seeds were largely, if not mainly, due to these demonstrations and it is, therefore, satisfactory to note that a sum of Rs. 5,000 was earmarked in the budget for 1921–22 for an extension of their scope.

Agricultural education in Travancore is still very backward. An agricultural school is under construction on the farm at Alwaye but meanwhile all the agricultural education provided is that given at the night schools on the paddy farm at Nagarcoil and the cattle farm at Trivandrum. There it is combined with elementary general education and is given to the farm labourers who are mostly members of the depressed classes.

The hopes we expressed some years ago that the activities of the Travancore Fisheries Department would result in a rapid development of the fisheries of the State to the advantage both of the Darbar and of those engaged in the industry do not seem likely to be fulfilled. The exports of fish last year fell from 3¼ to 2⅓ million cwts., the reason given being a bad fishing season and the low price of fish in the Tamil districts. The expenditure on the Department was Rs. 15,808 which exceeded the receipts by Rs. 3,300, the cause assigned being the decrease in the number of chank shells collected, the reduction in the royalty on these shells and the modification in the terms of the lease of lime shells. Of the three fish-curing yards, that at Muttam, where wet curing is the process favoured, dealt with 13,421 maunds of fish, that at Alleppey with 2,950 maunds, which were dry-cured, and that at Pallithode with 2,004 maunds. The Departmental fish oil factory at Alleppey was only open for eight days and the new private factory at Pallithode for three. If the results in Travancore are any guide, the wealth of fish in Indian waters would seem to have been greatly exaggerated. But we incline to think that the Travancore Darbar would be well advised to call in the assistance of an outside expert to investigate the whole question of its fisheries.

The Government review of the Report is very lengthy and singularly dull for it is little more than a very detailed summary of the Report itself. A Head of a Department is entitled to look to his Government for stimulating criticism and enlightened guidance. Last year, Dr. Kunjan Pillai looked in vain.

Indian Toy Trade.

In the Indian tariff schedule toys are in the category of "luxuries," discrimination against which was first made last year by raising the import duty from the general 7½ per cent level to 20 per cent, while in March there was further advance to 30 per cent.

The object was to help to meet successive deficits in the Budget, but the trade is too small to make any appreciable difference in this respect, having regard to the inevitable effect of restricting demand in the less affluent English and Anglo-Indian families which are the chief customers for imported goods of this class. Most Indian children have to be content with the crude local makes.

An effect of the classification not intended by the Customs Department is reported by our Calcutta Correspondent, who telegraphs that it has almost eliminated British products and enabled the Germans to capture the market with their cheaper toys. On previous occasions reference has been made to the disadvantage of the heavy duty on luxuries to the British importer.

In no part of the British Empire are outdoor games and sports more necessary, or more eagerly sought by our kith and kin, than in India. The Customs authorities include the playthings of the child and the grown-up as "luxuries," and the trade returns jumble them together under the heading of "toys and requisites for games and sports (including fishing tackle)." In the last complete war year the total value of the imports was about Rs. 26 lakhs, while in the first full year of peace, 1919–20, the value rose above pre-war levels to Rs. 52½ lakhs, and in the following year to Rs. 59 lakhs. In 1921–22 the total fell to Rs. 34¼ lakhs, a contributory cause doubtless being the scheduling of these articles as luxuries. The returns for the three months ended June 30 last indicate a subtantial recovery, presumably due to the capture of the trade by cheap German goods.

Forests in the U. P.

The aggregate income of the U.P. Forest department during the year 1921–22 was less by Rs. 80,000 and the aggregate expenditure more by about 3½ lakhs than the income and expenditure of the preceding years the net surplus of income over expenditure being nearly 12½ lakhs as compared with 16¾ lakhs in the year 1920–21. The decrease in income was, as the Government review points out, slight, and there would have been an increase of 2½ lakhs but for the cessation of the Nepal timber-extracting operations, the revenue from which was shown in the accounts of the two preceding years. The increase in expenditure was due to various causes, two of which were the spending on the Utilization Circle and the appointment of extra officers to the department. As regards the former of these two causes, it was explained in last year's review that much of the expenditure on the Utilization Circle is on capital account which should not, properly speaking, be charged to the ordinary annual budget of the department; and this point is rightly emphasized in the present report, the amount of such capital expenditure having been about 16½ lakhs. Even admitting, however, the truth of this contention, the heavy expenditure on the circle, which constantly pulls down the net profits of the department, has caused Government serious concern, and the Forest Board at the close of the year under review were asked to consider what the future of the circle should be, with special reference to possibilities of cutting down expenditure upon it and augmenting its income. The Chief Conservator submitted proposals on the subject to the Board, which has in turn made recommendations to Government, who are now considering what their course of action should be. The deliberations just referred to have taken place since the close of the year now under review, but they are alluded to here lest any student of the report should be led to wonder what is being done to make the circle more remunerative.

It may be mentioned here that, in addition to the enquiries referred to above as to the Utilization Circle, a close investigation has since the close of the year been directed into the finances of the Kumaun Circle, which during the year under review showed an adverse balance. A report upon the subject is now under the consideration of Government.

Chapter III of the Annual Report contains an interesting account of the work which has been done in the year upon sylviculture, and Chapter VI bears witness to much successful experimental and research work. The Afforestation Division achieved particularly good results; it has been shown in the separate report of that division that, when zamindars can be given ocular demonstration of the results attending afforestation of their waste lands, they are, generally speaking, anxious so to employ any waste which they possess; without such demonstration, however, propaganda work is generally ineffective. As pointed out in the Chief Conservator's report, the moral of this is that every suitable district should have its own demonstration plantation upto about 300 acres, and the possibility of achieving this aim is being considered.

The various branches of the Utilization Circle did good work in the course of the year. The number of students at present on the rolls of the Wood-working Institute and the ease with which the students obtain employment as soon as they choose to leave the Institute bear testimony to the worth of the educational instruction there imparted; and the research side also of the Institute did valuable work. The Sawmill and Turnery passed through a difficult year, but difficulties are gradually being overcome with the assistance of the expert staff recruited from Europe, and in the light of the experience gained by the present Conservator of the Circle, who has recently returned from a leave spent in Europe and America partly in the study of sawmills and wood-working concerns. The Rosin and Turpentine Factory increased its output of rosin by over 3,000 maunds, which is satisfactory, but the production of turpentine still compares unfavourably with that of the Jallo Factory in Punjab. The causes of this inferior output are known and action to remedy it is being taken as far as possible.

An important event of the year was, we note, the submission of the report of the Kumaun Forest Grievances Committee. This committee was constituted last summer to enquire into the causes of the discontent widely entertained by the hill people against the forest policy of Government in Kumaun. Before however the enquiries on which the report was founded could be carried out, a grave outburst of lawlessness occurred, resulting in many acts of wilful setting fire to forests. The Chief Conservator's report is

eloquent of the damage which was thus occasioned the Kumaun forests; the immediate direct loss of revenue caused by the fires amounted to 3½ lakhs of rupees, but this figure takes no account of the great injury inflicted on young growth in regeneration areas, which was in many cases entirely killed. It was unfortunate that the outburst of lawlessness occurred in a particularly dry and waterless year, which of course much favoured the designs of the incendiaries. The recommendations of the Grievances Committee, which have been accepted almost *in toto* by Government, are calculated to allay all reasonable discontent, and are, it is hoped, such as to render any recurrence of this destructive incendiarism improbable; these recommendations have been set out in the separate resolution which announced their acceptance by Government, and they need not therefore be recapitulated here. The Chief Conservator remarks upon them in his report that they have given a serious set-back to the conservation of forests in Kumaun, and that their general result, except in those areas which will remain more or less under departmental control, will probably be gradual destruction of excluded forests by burning, grazing and lopping. From a purely forest point of view these remarks no doubt are justified; but Government are convinced that the people of Kumaun would have been satisfied by nothing less than the steps which the committee recommended; there was no alternative therefore to putting the committee's recommendations into force as early as possible.

In the year under review there was no increase in the cadre of Indian Forest Service officers serving in these provinces, and consideration of the proposals referred to in last year's report for extensive additions to the cadre has been postponed, at least for the present. Five Assistant Conservators recruited by the Secretary of State to existing vacancies and a Forest Engineer, however, joined the department, and four posts were added to the cadre of the United Provinces Forest Service.

In consequence almost entirely of the incendiary outbreaks already referred to in Kumaun, the number of cases in which prosecutions under the Forest Act were launched rose considerably; such cases would have been more numerous still if the time of the Kumaun forest staff had not been fully taken up in quelling fires and if many prosecutions had not been dropped as a result of the recommendations of the Grievances Committee. So many restrictions which were locally regarded as vexatious and were in consequence frequently transgressed have now been removed, consequent on Government's acceptance of the recommendations of the committee's report, that in Kumaun at least the number of forest cases should be enormously diminished in future as compared with past years.

The ideal of Paris is to create a university city by means of which she hopes to revive and to improve upon her great scholastic traditions of the middle ages. An area of 72 acres on the site of a portion of the dismantled fortifications of Paris has been acquired. On one side of the site is a beautiful park. The opposite site is flanked by what will be a vast university playing field. On this site it is hoped to build halls for students of as many countries as apply. Up to the present, Great Britain, Canada, China, Indo-China, the United States, Scandinavia and Belgium have applied for sites. The ground allotted to Canada, about one acre, has already been reserved. It is the desire of the British Committee to place the British College next to the Canadian one. This project has been made possible by the generosity of M. Deutsch de la Meurthe, who has given the magnificent sum of 10,000,000 francs (£400,000 at par or 60 lakhs of Rupees) for the French portion of the scheme, which will be put in hand as soon as plans are ready. So far the English College is but a dream. A committee of influential persons has been formed in order to give publicity to the scheme and to solicit donations, but what is really required is some benefactor to donate a sum sufficient to cover the expense of building and of endowing the college with the means of playing its part in this brotherhood of the youth of all nations. Each nation will make its own rules for its own college. The British Committee hold that a discipline, not irksome but enforced, like that prevailing at Oxford and Cambridge would be suitable for the British College. Students would be granted all reasonable liberty to see and enjoy Paris life, but a resident warden or rector would perform similar functions to those performed by the Dean at an Oxford or Cambridge College.

Indian Banking Policy.

By B. Ramachandra Rao, M.A., Lecturer in Economics and Commerce, Calcutta University.

The classical exposition of Commercial Banking theory has laid down that the chief business of 'the Commercial banks' is to finance the short-term needs of business men. The paramount duty of the Commercial Bank is to collect the floating capital of the Community into its hands and lend it to *bona-fide* business men or invest the money in self-liquidating and rapidly maturing loans or convert it into such other assets as not only to lie within its quick and easy control but may be also converted into standard metallic money with the minimum of risk attendant on such a conversion.

This is all theory proper but coming to actualities one finds the so-called "Commercial banks" making loans for investment purposes, creating fixed capital, helping speculators who dabble on the Stock Exchange, pursuing industrial financing, granting loans to persons for purely consumptive purposes and extending their control over the trade and industrial enterprises of their countries.

This tendency to "mix" Commercial Banking with investment business, promoting and syndicating operations is noticeable chiefly in the case of the banks of the United States of America and Germany.

As one American banker points out "the American Commercial banks have been forced in self-defence to invade the business of the "Investment banks" and one finds that "only one-third of the loans of the American Banks belong to the category of Commercial finance and the balance is mainly concerned with investment purposes". Another reason why these Commercial banks have taken to investment business is mainly this. They do not find enough employment for their huge resources. "Neither the call money market in New York nor the rediscounting of country bank paper, nor the availability through the brokerage houses of the promissory paper of a limited number of widely known mercantile and industrial establishments will absorb the excess and recourse is had to the bond market." It is not difficult to find other motives for this kind of investment finance. The desire to escape taxation, the anxiety to become banker to some corporation or municipality and the desire to secure high profits from promoting, syndicating and underwriting business must have induced them to descend to investment financing.

The case with the German "Grossbanken" or the "Credit" Banks of Germany as they are generally known is however different. According to Prof. Reissor these banks were forced to take up all these ultra-commercial operations in order to meet the real demand of German economic development. These banks do not aim solely at profits but consider the development of their industries as a more important duty incumbent on them. One German bank director while giving evidence before the American National Monetary Commission says that the "one difference between the banks of England and Germany is that, in England, the primary purpose of the bank seems to be to secure large earnings for their shareholders. In Germany our banks are largely responsible for the development of the Empire having fostered and built up its industries."

Another cardinal reason why the 'credit banks' of Germany were forced to conduct this "mixed" banking business was the absence of "financial agencies" and as there was no strict division of labour among the existing institutions the banks were forced as Dr. Reisser says "to occupy in the national economy the place held by the maid of all work in the private household" and to take upon themselves all the tasks which in England are apportioned as a rule among numerous financial agencies other than the Jt. St. Banks of the London Money Market.

These seem to be the reasons that forced the German Banks to attempt "adventuresome banking" as English critics say. It might be wrong on their part to pursue their audacious policy of "peaceful penetration" into foreign countries. Their assumption that "trade follows the banks as much as the flag" might not be wholly correct. Their policy of acting as the "brains of the industrial army" and the "General staff of German industry" might be questioned. But judging them by practical results and the notable success they have achieved so far, it is well-nigh difficult to condemn them. The remarkable absence of serious Collapses helped these banks to pursue their own policy of 'mixed' banking business unhampered.

It is only in conservative England that the Commercial banks or "cheque-paying banks as Hartley Withers styles them, are not"

daring and venturesome as to 'mix' Commercial banking along with other lines of business however tempting they may be from the standpoint of profits. They still stick to their conservative lines of banking operations and refuse to transact such operations as are alien or genuinely opposed to the true interests of the Commercial banks.

This is what a study of foreign banking conditions teaches us. Will it be wise on the part of the Indian Joint Stock Banks to transact "mixed" banking business or will it be wise on their part to follow the "quiet" and conservative policy of the British and French Banks ?

Before attempting to discuss this matter, it is highly imperative to note the exact conditions prevailing in the Indian Money Market. Several of "Swedeshi Banks," of the Punjab attempted industrial financing and smitten with an ambition to get-rich-quick, they took to investment business as well. But the inevitable has happened and almost all of them were signally punished during the recent Banking Crisis.

Some of the existing Indian Jt. St. Banks are trying to follow the path of the German Banks. Some of our Industrial Banks which profess industrial financing as their avowed mission, conduct ordinary commercial banking business as well. It is indeed strange to note that the Indian Industrial Commission itself recommends the pursuit of Commercial banking by Industrial banks, that may arise in our country. This anomaly may perhaps be partly explained as due to their desire to make the industrial banks profit-reaping concerns from the beginning and perhaps due to their belief that our present stage of industrial development does not warrant the establishment of purely "Industrial Banks."

It was just a few days back that the Marwari Commercial Bank and the Luxmi Industrial Bank were floated in this city. The former aims at a 'mixed' banking business while the latter tries to promote the existing indigenous industrial concerns.

The promoters and organizers of not only these banks but almost all indigenous Joint Stock banks share along with some of our National economists, the welcome sentiment of our economic uplift. They aspire to utilize the banks as tools for the aggrandizement of their national ambition. But they should bear in mind that their attempt at 'mixed' banking business is quite a difficult and risky one. The mere display of ingenuity in the matter of adopting a national programme similar to that of the German Banks is not sufficient. Equally wise and capable management should be forthcoming.

Besides it is highly erroneous to labour under the misconception that Germany's rapid industrialization, her economic transition and the development of her foreign trade were exclusively due to the helpful attitude of their banks.

Of course, the policy of the German Banks interlocking themselves with industrial companies, helped the development of their industries but other causes operated as well to make Germany capture many of the world markets within a surprisingly short time. Extensive Government aid to industries, through different freight rates on Government owned railroads, and through rebates and other shipping facilities, a widespread industrial and commercial education, the adaptation of German export articles to foreign tastes, the development of scientific knowledge on a wide scale and its close application to industry and the wise treatment of the allied problems of finance, industry and transportation as different aspects of one and the same problem —these must have ensured the rapid industrialization of Germany. The German banks have responded well to the call made on them by these various industries but their fostering care is only one among several factors contributing to the prosperity of the German industries.

As has been written already, the German banks were well managed from the beginning. They always insisted on a high-paid up Capital of their own and supplemented their resources by attracting long-period deposits and with these they were able to grant "longer credit". The German banks knew full well the dangers of locking up their "Commercial deposits" in long-period loans which would be the ultimate result of Commercial banks attempting a "mixed" banking business. They realized that their own Capital can be locked up with impunity in more lucrative but less easily realizable assets than short-term Commercial paper and the increase in banking funds in Germany was due not to an increase of their deposit money as in the case of the English Banks, but to "their genuine mania for increasing their capital."

It is highly reprehensible then on the part of our banks to imitate the German Bank tactics so long as they do not employ the same precautionary measures. It is a well-known

fact that the paid-up Capital of our commercial banks is very little and ever since the days of our banking crisis, deposits generally are made for short periods, say 4 or 5 months and it will be well-nigh criminal folly to grant long-term loans with short-dated deposits. Neither are our banks richly endowed with the requisite technical knowledge to pursue successfully industrial financing.

It does not necessarily follow then that our Commercial Banks should pursue a Conservative policy similar to that of the English and French Banks.

Leaving aside the arguments of the late Adolf Wagner and others who consider the German Banking policy as eminently superior to that of the English Bank's policy as wholly irrelevant to our purpose, it must be considered whether the Conservative policy of the English Banks would suit our present national interests. Handicapped as the Indian industrialists are by the absence of specializing financial agencies such as the "acceptance houses" underwriting and syndicating agencies which abound in any number in the London Money Market, a rigidly conservative policy on the part of the Indian Banks would severely bar their progress for the lack of adequate capital at the nick of the time.

Secondly, the existing foreign banks in India do not possess the will nor have they the requisite capital at their command to pursue an ambitious national programme for our economic uplift. These banks have not succeeded in breaking the power of the Mahajan who to quote Sir Daniel Hamilton's words "is still entrenched safely behind the money-bags while the victims of his silver bullet lie around in all heaps." These foreign-managed banks do not cultivate any business transactions with the small industrialists, business men and agriculturists. As Sir T. Morison says "these are too small to interest the great financial houses" the policy of existing foreign banks favouring European firms as against Indian managed ones is too well known to need any elaboration here. One should only read the startling disclosures of Mr. Currimbhoy A. Peerbhoy before the Indian Industrial Commission, to realize the truth of this charge. These banks never forsake the cardinal principle of safety which Commercial Banks should always possess in their minds. But managed as they are by trained Westerners these cannot realize the true needs of our situation.

Again, even in England, this "quiet" policy of their 'Commercial banks' has been criticised. One should be aware of the fact that there exists a league known as the "British Banking Reform League" which is exerting its best to bring about improvements in the system. Quite recently the tonic of war roused the English public opinion and the English banks were taken to task for their extreme timidity and conservatism. The model of the German Banks was placed before them for imitation but they have unitedly refused to be more "adventuresome" and advocated the specialization of each function by separate institutions intentionally designed for these purposes. The result of this agitation ended in the formation of the "British Trade Corporation" to fill the gap between the home banks, Colonial and British foreign Banks and to grant facilities which the existing banks are not in a position to extend.

The doyen of the English Economist, Dr. A. Marshall says the English Banks should extend the scope of their work. No apology is needed to quote his well-balanced opinion —*in extenso*—"While these services to which they devote most of their strength are of unapproached excellence, they make little attempt to rival German or even American Banks in the direct furtherance of the large ventures of industry. By limiting their operation to a multitude of relatively small risks, they are enabled to base their advances chiefly on capital deposited with them and therefore to return extremely high dividends on relatively small paid-up capitals. There are therefore some strong arguments both of equity and of national advantage in favour of the exertion of a slight pressure on them, by legislation or otherwise, tending to increase the ratio which their paid-up Capitals bear to their total liabilities. They could then with safety to themselves and their depositors undertake a rather greater share than they do now of the larger responsibilities of the country's business abroad as well as at home, while they would still cover so great a part of their liabilities by fluid assets, as to be certain of this ability to meet promptly further larger demands that might be made on them."

So these British Commercial Banks—the "paragons of Conservatism" as one critic styles them—do not afford the real solution that we have been seeking.

Our Indian Banks, though they grasp the necessity of a liberal financial assistance to the

existing industries and however much they may be animated with a welcome sentiment to emulate the bold and daring yet fruitful policy of the German Banks must realize their own limitations. The small amount of their paid-up Capital, the low proportion of their cash holdings, the short-term nature of their deposits and the absence of masterly financiers endowed with an ambition to display a Napoleonic faculty in its use, should warn the banks as to the dangers involved in extremely speculative Courses or prohibit them to stretch their hands towards an absolute control of trade and manufacture.

The real remedy then lies in specialization. Besides, banks pursuing strictly Commercial business, there should be industrial banks, investment banks, mortgage banks and such other concerns to specialise in long-term loaning. Numerous financial agencies should be created so that our banks need not necessarily, like the German banks, be nicknamed "*alerei enter prisen*" and "maids of all work or a kind of financial universal providors." There should be a strict division of labour among the existing banks and those that may arise in the near future. It may be true that the smaller banks and the newly started ones may not find enough business for their loanable funds. They may be compelled by the virtue of necessity to embark on various other kinds of business of a strictly unorthodox character. In such cases, it is always prudent to have several departments so as not to "mix" up those various kinds of business with the legitimate Commercial banking operations. The bank managers should be always honest and alert and never allow their Commercial banks to degenerate into mere investment concerns.

While realizing that better success can be achieved by specialization, these Indian banks should not forget that the real strength of the banking system depends on the recognition of their mutual interests. It is not mere sentiment on the part of the existing banks that really counts. A better understanding of banking business is indispensable for any real salvation for our industries.

World's Largest Central Sugar Factory.

The World's largest central sugar factory is situated in Cuba and its name is Central Delicias. During the campaign which ended in the third week of September, 1922, this Central produced 1,046,493 bags or 150,000 tons of sugar which is a record production for a single factory in the world. During the previous year it produced 110,000 tons of sugar and even then stood first among the world's factories. When one compares the entire production of sugar direct from cane (27,634 tons in 1921-22) by 18 factories working in this country with the outturn of a single factory in Cuba one realizes to what size factories in that island have developed.

It is well known that the larger the size of the factory, the lower the cost of production, but it is not everywhere that big size factories can be put up. The erection of large factories in Cuba has been facilitated by a fairly abundant supply of cane which is the principal crop in the island and for which the soil and climatic conditions are extremely favourable. All cane grown in Cuba is offered to factories for milling there being no local manufacture of *gur* by cultivators as in this country. Otherwise conditions of cultivation there approximate nearly to those of India. 80 per cent of the Cuban cane crop is grown by 'colonos' or independent farmers with hired and ill-supervised labour of which the supply is inadequate. But as Cuba is a tropical island it is able to produce about 20 tons of sugarcane per acre while a large percentage of the area under cane in India being within the subtropical parts where climatic conditions are not so favourable the average yield of cane is hardly more than 10 tons per acre. Cane grows in Cuba almost like a weed and six ratoons are not infrequently taken. The result is cheap cane and the low cost of sugar production in Cuba is largely due to the cheapness of the raw material and the large scale factory production.

The principal difficulty which the factories have to face in India is the insufficiency and the irregularity in the supply of cane. Many of these, small as they are, are not able to work to their full capacity for want of cane, though with the rise in the price of sugar and the consequent rise in the price of the cane some improvement in the supply of cane is noticeable and the fact that new factories are being established shows that capitalists have hopes of overcoming this difficulty in future. It is not of course pretended that factories here will attain in the near future to the size of those in Cuba but any increase in their capacity will mean a reduction in overhead charges per maund of sugar produced and strengthen the position of the factories in competing with foreign sugar imported into this country.

Asbestos Mining Industry.

In Mysore we have been long talking of the Asbestos industry. From a recent Canadian report, we note the progress of that industry in Quebec, for our Mysore readers. The asbestos deposits of the Province of Quebec, which furnish at present between 85 and 90 per cent of the world's supply of that substance, are found in a long and narrow zone of serpentine rock which enters Canada from the south, near Lake Memphremagog, and extends in a north-easterly direction, with more or less break, into the Gaspe Peninsula. According to a report by the United States Vice-Consul at Montreal, the workable deposits, so far as known at present, are confined to (1) that part of the zone which extends from Colerine to East Broughton, for a length of about 25 miles in Megantic, Wolfe, and Beauce Counties, and (2) a small development of serpentine in the vicinity of Danville in Richmond County. There are at present six producing centres—East Broughton, Robertson, Thetford Mines, Black Lake, Colerine and Danville.

The extreme outcroppings of asbestos ore in the serpentine zone are more than 400 miles apart, the most southerly being near the Vermont border at Mansonville, and the most north-easterly in the Gaspe Peninsula at Mount Albert, in the Weir district, and at Mount Serpentine on the Dartmouth River. A later discovery of an out-cropping of asbestos ore in the Lake Temiskaming district was investigated in 1918 by an official of the Quebec Department of Mines and the presence of veins of asbestos fibre was verified. This prospect is too far from existing lines of communication to offer much interest at present, even if development work on the property reveals the presence of asbestos in economic proportions.

The asbestos extracted from the mines of Quebec is exclusively of the chrysotile variety, the demand for which has within the past few years been greatly augmented by the new uses found for this material.

During 1920 the output of asbestos from Quebec mines amounted to 174,521 tons, valued at 11,758,234 dollars, which is equal to more than 50% of the value of the Province's total mineral production. The corresponding figures for 1919 were 135,861 tons, valued at 10,932,289 dollars.

Practically the entire output of the Quebec asbestos mines is exported, as there is only one concern in Canada manufacturing asbestos products. This factory produces for home consumption and export asbestos slates, shingles, interior and exterior coverings, boards, paper, and undulated asbestos sheets. About 80 per cent of the asbestos exported from Canada goes to the United States, whence perhaps a small quantity may be re-exported in the crude state. England takes 7 to 10 per cent, and smaller quantities go to Italy, Japan, France, and other countries.

Eighteen factories making sugar direct from cane worked in India during the season 1921-22. Nine of these are situated in the Province of Bihar and Orissa, six in the United Provinces, one in Assam and two in Madras. Enquiries were instituted by the Sugar Bureau to ascertain the output of these factories, and we are much indebted to the management of each factory for the promptness with which the statistics required under various heads were furnished. The total production of sugar direct from cane by modern factories in India amounted during the season 1921–22 to 7,53,638 maunds, or 27,634 tons, as compared with 6,69,291 maunds, or 24,541 tons, in the previous season. It will be seen that the major portion of sugar production in India is from North Bihar, where, roughly speaking, cane from an area of over 30,000 acres was put through factories. Although the United Provinces have the largest percentage of the total area under cane in India, yet the production of refined sugar by modern methods in these provinces fell during the year by nearly 10,000 maunds. A comparison of the statistics will show that factories were fortunate in getting more cane for milling (10,28,221 maunds additional) in the season 1921–22 than in the previous season, resulting in an increased output of sugar for the whole of India by 84,340 maunds. A slight improvement is noticeable in the efficiency of the factories as regards the recovery of sugar from the cane crushed and the consequent reduction in the production of molasses to sugar manufactured. If we take the all-India figures we find that on an average 14.28 maunds of cane were required this season to produce one maund of sugar as compared with the 14.54 maunds required in the previous season.

British Scientific and Industrial Research.

Some examples were given in an article last week of results already realized in practice during the last year from the work of the Department of Scientific and Industrial Research, or with its help, but there are various other points of special interest in the year's history to which attention may be drawn.

Perhaps the most remarkable circumstance of the work of the Research Associations set up with the aid of the Department is that, without ignoring pressing needs for dealing with individual practical problems, they are showing a marked disposition to undertake the investigation of fundamental principles, and indeed to regard such investigation as their most important duty. It seems to be realized that industrial research may be, and often must be, a roundabout process, in which more haste is apt to lead to less speed, and a long and exploratory way round is the shortest and sometimes the only way home. Thus, the Research Association for cotton finds it necessary to study not only the properties of single fibres but even the chemical constitution of the cellulose molecule; that for photography is investigating the fundamental properties of silver haloids and the physico-chemical properties of gelatine and similar colloids; the Portland Cement Association, the exact chemical nature of the compounds of which cement is composed; even the abrasives and polishing powder, of which mention was made last week, required a prior elaborate investigation of the primary phenomena of abrasion and polishing.

The Research Department's Council in its Report lays stress on the essential unity of all genuine research, whether industrial or academic. The essential difference between the two seems indeed to be no more than that industrial research must finish up in the conditions imposed by the circumstances of manufacture, while academic research can, and usually must, work under the laboratory circumstances that best suit its investigation. If this distinction is kept constantly in mind, both in planning industrial researches and in selecting men to conduct them, industry stands to gain much from recognizing the essential unity of scientific method to which the Report draws attention.

National and Imperial Work.

The Department's work for national purposes has progressed along the lines of previous years. It deals, on the one hand, with problems that are too fundamental or affect too many industries to be undertaken by any research association, and, on the other hand, with the needs of the military and civil services; and increasingly successful use has been made of the system of co-ordinating boards and committees. The account given in the report of the investigations concluded during the year or still in progress indicates well the enormous variety of problems investigated and their essential importance to most industrial activities.

Indian and Colonial authorities and associations continue to show the increasing activity that was recorded in previous reports though much hampered by shortness of funds. The Empire Cotton-Growing Corporation has been established, supported by a Government grant of about £1,000,000 (the proceeds of a war windfall) and a levy, voted by over 90 per cent of the spinners in this country and now to be made compulsory on all, of 6*d*. per 500lb. bale on all raw cotton imported. The Indian Central Cotton Committee similarly is promoting a Bill imposing a cess on all cotton used in Indian mills or exported, the proceeds of which—estimated at about £53,000 a year—are to be used for the improvement of cotton cultivation in India. A cess is also being levied on exports of lac for the benefit of the Indian Lac Association for Research. Other measures relating to Indian natural resources are being retarded or suspended for reasons of economy. Australia similarly is finding difficulty in obtaining the necessary Government support for its forest products research work, though laboratories are being started for much the same sort of work on standardizing and investigating physical problems as is done over here—perhaps a relatively unfortunate expenditure, having regard to the fact that, for the time being, such work could be done in this country, whereas investigation of natural resources cannot. Research movements are also reported from New Zealand, Canada, Ceylon, the Soudan, and the West Indies.

Individual Researches and Workers.

Intermediate between the support of national researches and of those undertaken by industrial research associations are the grants that are made temporarily, with the object either of keeping the work alive until the

appropriate industries form research associations to whom it can be transferred, or of assisting a technical institution in some research not belonging specifically to a particular industry.

During the year under notice, for instance, grants were made to the institution of Mechanical Engineers to enable it to amplify its investigations into cutting tools and to undertake investigations on a sufficient scale into ferrous alloys. The grants to the Institute of Glass Technology at Sheffield University have now ended, and a large number of researches were brought to a successful conclusion, which are expected to be of great practical value in giving the industry a scientific basis in many matters on which hitherto it has had to depend on empirical results. The work of the institution of Mechanical Engineers on steam nozzles and turbines is being extended to impulse nozzles, and the work of the committee of the Institution of Civil Engineers on deterioration of timber, metal, and concrete by sea water, on which an interim report has been published recently, is being continued. The Liverpool Tidal Institute has been continuing its investigations of tidal observations, as well as of the tide gauges and predicting machines and of astronomical and dynamical theories, matters of the first importance to the shipping trade, by which ultimately the work of aiding the institute should be taken over.

While the number of these temporary grants tends necessarily to decrease as the number and activity of research associations increase, grants to individual workers are more numerous than in previous years, though the standard of award set by the Department has been raised. In an appendix a list of some 150 scientific publications is given which relate wholly or in part to work done with the aid of such grants.

Records.

The work of the Records Bureau started two years ago has been steadily continued and extended, and is showing itself to be of the expected value. The bureau receives all the material sent in by research institutions, boards, and committees of the Department, research associations, scientific and professional bodies that it has aided, and other Government Departments. It is now also collecting important groups of publications not otherwise freely accessible to the Department's research organizations, such as those of Government Departments in foreign countries. All this material is systematically absorbed in its records, not in order to build up "a large hoard of neatly docketed papers," but to collate the vast mass of information it receives in such a way as to enable it to be utilized readily and fully. It is said, indeed, to be "available for consultation and reference at a few moments' notice"; and, subject to the reservation that confidential information is not communicated except with the prior knowledge and consent of the organization from which it has been received, it is brought promptly to the notice of those engaged in cognate investigations, and presumably is at the disposal of any other persons or bodies interested legitimately in the subject. The bureau's examination and comparison of programmes of research submitted by various research bodies has already prevented unconscious duplication and repetition of research work, and has suggested the joint attack by two or more organizations on problems of common interest.

The Present Situation.

The most satisfactory fact in the history of the year's research is that the bodies concerned show an increasing disposition to realize the importance of the work and to co-ordinate with each other in carrying it out. The Research Associations, for example, appear to be receiving increased support from their constituents, and last year earned in grants from the Department just over half the aggregate amount of the grants made in the five years since the first two of them were established. The industries, too, in the words of the Council, "are losing their natural shyness of Government Departments," and other departments show a growing disposition to come into closer and more confidential relations with the Research Department. In instances quoted in the report, it has already made savings for other departments to the value of many times the cost of its co-ordinating boards and committees, or perhaps even of the entire cost of the Department. In a measure these tendencies may be analogous to the picturesque scenes of flood, fire and other catastrophes, which are described as involving wild beasts and their natural prey in an amazing truce. But even this co-operation has been due to the stress of the present economical situation, it seems likely to continue after the stress has been removed.

The chief danger to be apprehended lies, indeed, in the delay to which essential work may be subjected in the supposed interests of economy. The Department at the repeated

request of the Treasury has twice reduced its estimates, which now stand at less than two-thirds of their original amount, and further investigation by the independent Geddes Committee has shown that no further reduction can be made without sacrificing work that is "absolutely and directly necessary." Some such sacrifice may, indeed, have been made already. This country's expenditure on research is only a fraction of what is spent on it in the United States, and our industries may ultimately have reason to regret the extravagance of having economized on the most powerful means of increasing production.

Research on any large scale, says the "Times", eminently an enterprise that cannot be improvised, and must be planned years ahead. Its finance and its supply of workers must respond to its needs as they declare themselves. The men must have the right kind of ability and receive a very special training. Research workers and students cannot be found ready made. A sufficient supply of the right men will not have put themselves through the necessary years of preliminary training unless they are assured of continued employment, which they cannot be unless the financial limits of the work are decided years ahead and consistently maintained.

Agricultural Bank for Trinidad.

In pursuance of a resolution of the Trinidad Chamber of Commerce, Inc., passed in June last, urging on the Government of the Colony the necessity for the establishment of an Agricultural Loan Bank on the lines adopted by Canada, the United States, and other large agricultural countries, the committee appointed by the Governor, Sir Samuel Wilson, has held four meetings, under the chairmanship of Mr. R. G. Bushe, at which the following resolutions were adopted :—

That this committee approves the establishment of a Government agricultural bank, and urges its establishment within the Colony as being most necessary.

That the committee considers that funds for the Government agricultural bank should be obtained by the issue of Government Debenture Bonds, and that the banks should be given power.

To make loans on first mortgage on agricultural lands having crops of a permanent nature, all such loans being made repayable by equal annual or semi-annual instalments over a period of years; and

To make advances against crops for the purposes of the maintainance and cultivation of estates.

That the bank should be administered by a board of management composed of a chairman and four members to be appointed by the Governor, the latter being persons representative of the interests of both agriculture and commerce; that the chairman should be appointed for five years; two of the other members in the first instance for two years, and their successors subsequently for five years, and the other two members in the first instance for four years, and their successors subsequently for five years; and

That the board should have power to appoint the necessary staff.

That without complete information as to its effect on the general revenue of the Colony, the committee is not prepared to recommend the suggestion of the Chamber of Commerce that the Government bonds to be issued to provide funds for the bank be exempt from Income-tax.

At the last meeting held on August 30 (which was adjourned *sine die*), a sub-committee was appointed to consider the legislation necessary to give effect to the Committee's recommendations.

The Agricultural Society has also signified its approval, and has urged on the Government its early adoption, and various public meetings throughout the Colony have passed resolutions to the same effect. The principles which it is proposed should govern the operation of the bank, give the assurance of economic soundness to the scheme, and it only remains for the Secretary of State for the Colonies to approve.

While the proponents of the scheme are convinced that all the funds necessary for the efficient operation of the bank can be obtained in the Colony, the attitude of the local commercial banks may be fairly stated as that it would unduly deplete their funds were it sought to raise all the working capital of the agricultural bank within the Colony, as there are interests other than agriculture needing financial support, and they suggest, to begin with at all events, that the bonds to be issued by the bank under the ægis of the Government should be offered for sale in the United Kingdom.

The Indian Rural Problem.

The rural problem, in all parts of India, with its chronic disease, chronic poverty and periodical famine is engaging the attention of the Government through its agricultural and co-operative departments. Much effort on the part of the rural people themselves is necessary to alleviate their distress. Mr. G. S. Dutt, I.C.S., Collector of Bankura, in his public lecture delivered under the auspices of the B.C.O. Society on the 19th July 1912, deals with this important problem in a lucid manner. What he says of the grievances and troubles of the agricultural population of Bankura before 1919 is true of the same people in other parts of India at present. Mr. Dutt examines in detail the causes of poverty in Bankura under four distinct heads, namely: (1) Litigation; (2) Absence of organization; (3) False economy; and (4) drought and crop failures. Speaking under the second head, he says :—

"Absence of Organization is one of the most important cause of poverty not only in Bankura but in rural India in general. The rural population represents a multitude of disunited individuals in competition against the industrial organizations of the world. The villagers no longer enjoy their old sheltered economic position. Themselves utterly unorganized, the rural population has been drawn into the whirlpool of world competition. The result is that the rural producers and consumers alike are at a hopeless disadvantage. As producers they have to sell their produce at the cheapest market and as consumers they have to buy at the dearest market. The inevitable consequence is a general impoverishment of all sections of rural population—agriculturists, labourers, weavers, cobblers, and artisans. Prices may rise or fall, but it is not the small rural producer, artisan, or consumer but the middleman who benefits by such rise or fall. The only course which can save the villagers of all classes from this unequal struggle is co-operative organization for production and marketing on the one hand, and co-operative organization on the other, among all sections of rural population and the elimination of the usurer and the middlemen."

From the year 1920, efforts are being made to bring relief to the rural population of Bankura district by public men like Mr. Dutt on one hand and the Department of Agriculture on the other. The District Agricultural and Welfare Association, which has been started recently, has done vigorous propaganda work for the formation of co-operative irrigation societies. A Co-operative Irrigation Bank has been established at Bankura with a share capital of 5 lakhs of rupees to finance these societies. The societies formed fall under two classes, namely, societies for reconstruction and societies for re-excavation. Mr. Dutt pleads eloquently for the progress of co-operative movement in rural areas thus :—

"If the present movement of co-operative irrigation receives the fullest public support and encouragement, Bankura may yet be the Utah of India and the movement originated there may, after transforming this district, transform the other arid regions of India into smiling lands of green verdure, salubrious villages, and prosperous townships, and co-operation, after finding, as in America, a nursery for its growth in irrigation will, it may be confidently hoped, extend rapidly to other industries on which the life and progress of the community depends."

Sir Thomas Ainscough's report on the conditions and prospects of British trade with India for the last fiscal year, revised to September, has been issued by the Department of Overseas Trade. The report says that there are many indications that the low water mark has been passed and that the boycott movement is steadily losing ground. Discussing the emergence of racial feelings in business the report says that the next few years are bound to be the most difficult period of transition. It warns British the interests as to the need to deal tactfully with many problems which are likely to arise. Although many adjustments of trading methods may be required in view of the formidable rocks ahead, Sir T. Ainscough is sufficiently optimistic to believe that British exporters and merchants will hold their own. He urges Lancashire to accept frankly the present position relative to the growing control of the Legislative Assembly over the finances and fiscal policy, in which case he does not see that there is any reason why import trade and mill trade should not make smooth progress side by side to the ultimate benefit of the great mass of consumers.

Irrigation in India.

The triennial review of irrigation in India is an interesting document and covers the field of irrigation work hitherto undertaken in India.

During the last forty years, there has been a steady growth in the area irrigated by Government irrigation works, from ten-and-a-half million acres in 1878–79, the area annually irrigated rose to nineteen and a quarter million acres at the beginning of the century, and twenty-eight million acres in 1919–20. From this figure it fell to twenty-seven million acres in 1920–21. The main increase has been in the class of productive works. Future schemes are expected to add about 100,000 acres to this total, while work under construction will further enhance it by two-and-a-half million acres. Projects have also been submitted to the Secretary of State for sanction, which, when constructed, will add another four and three-quarter million acres. A total eventual area in British India of about 36 million acres is thus contemplated from works sanctioned or awaiting sanction.

Sutlej Valley Project.

Irrespective of the natural extension of existing areas and of new projects, of which several are under consideration, the Sutlej valley project now before the Secretary of State, will, if sanctioned, add nearly three-quarter million acres to the 650,000 acres irrigated from Punjab canals by branches constructed for Indian States. As regards inundation canals, most of which are in Sind and the Punjab, it is proposed to construct a barrage across the Indus, at a cost of 569 lakhs, and four across the Sutlej, at a cost of 384 lakhs.

Touching the financial returns, the report states that the total capital invested in works has risen from Rs. 4,236 lakhs in 1900–01 to Rs. 7,861 lakhs in 1920–21, an average increase of Rs. 180 lakhs. As regards revenue the Government irrigation works of India, taken as a whole, yield a return of from seven to eight per cent on capital invested on them. This is a satisfactory result as Rs. 1,173 lakhs of the total value have been spent on protective works which return less than one per cent and Rs. 703 lakhs on minor works, the yield from which varies between four and six per cent. The capital outlay also includes expenditure on a number of large works under construction which have not yet commenced to earn revenue. Taking the productive works as a whole, the capital invested in them at the end of 1920–21 was Rs. 5,986 lakhs. The net revenue for the year was Rs. 531 lakhs, giving a return of 8.88 per cent, as compared with 9 per cent in 1918–19 and 9.75 per cent in 1919–20.

Protective Works.

As regards protective works, the working expenses have been met and the result of 1920–21 afford hope that they will soon begin to do better, although they are not built with any idea of their proving directly remunerative. They represent a capital outlay of Rs. 1,173 lakhs and returned 0.19 per cent in 1918–19, 0.37 per cent in 1919–20 and 0.94 per cent in 1920-21. The revenue obtained rose from two lakhs in 1918–19 to four lakhs in 1919–20 and to over 11 lakhs in 1920–21.

The minor works represent a capital expenditure of Rs. 703 lakhs, and those for which accounts have been maintained returned 5.83 per cent in 1918–19, 5.35 per cent in 1919–20 and 4.77 per cent in 1920–21.

The main fact which emerges from the results of the triennium is that the irrigation systems are capable of functioning with effect in years of drought. This is the crucial test and the canals have come through it well. In spite of short supplies, the irrigation was maintained at its normal figure, a result only increasing care find watchfulness, can bring about and which, even with such care, could never have been obtained but for the enforcement in the past of strict observance of the policy that fair weather canals shall not be encouraged and that every system shall be so designed that, with the application of rigid economy, it shall be able to do its irrigation, even in the most unfavourable years.

The sudden death reported from Home of Sir Francis Gore-Browne removes a great authority on company legislation and a lawyer who had an extensive industrial practice. Only a few months ago he revised his "Handbook on the Formation, Management and Winding up of Joint-Stock Companies," which is one of the clearest and most lucidly written works on its subject, and is now in its thirty-fifth edition. There were few cases of importance that came before the English Courts in connection with companies on which his opinion was not secured by one side or the other.

Indian Co-operative Movement, 1920-21.

By C. T. Rao.

From the 'Statements' showing the progress of the Co-operative Movement in India during the year 1920–21, the third of its kind issued by the Department of Statistics, India, we gather some insteresting facts :—

It is gratifying to note the progress made by the Co-operative Movement in India during the year under review. During this year 6,731 fresh societies have been started and the total number of societies that have been working during the year is 47,503, which includes Central and Provincial Banks, Agricultural and Non-Agricultural societies of all kinds. The increase in the number of societies during the year under report is greater than in the previous year. The province of Ajmer-Merwara has the largest number of societies in proportion to its population. Next come in order Coorg, Burma, Punjab, Assam, United Provinces, and others.

There is an increase of about 200,000 members during the year over the previous year's number. Here again Coorg and Ajmer-Merwara top the list in having the largest number of members in proportion to their population. Bhopal, Mysore, Bombay and other provinces come next in order.

In regard to the working capital and reserve fund of the societies, we notice a decided increase of Rs. 5,02,000 over the previous year's amount. The working capital of the societies in the Madras Presidency during the year is Rs. 4,90,90,000. The societies of the Madras Presidency have thus the largest amount of working capital among the provinces in India. Punjab, Bombay, Bengal, and other provinces come next in rank, in order.

The number of Provincial Banks during the year is the same as in the previous year (1919–20); but there is a growth in the activities of these Banks. The societies financed by them have considerably increased in number. The majority of the societies financed are Agricultural Credit Societies. The business transacted by the banks is on the increase both in regard to receipts from loans and deposits repaid, and loans and deposits received during the year. We notice an increase in the number of central Banks, but there is not the corresponding increase in the number of individuals and societies financed by them.

Then coming to the operations of co-operative societies, both Agricultural and non-Agricultural, we note the following features: There is an increase of about 2 crores of rupees in the working capital of the Agricultural Societies over the last year's amount. There is also an increase of about 6,000 Societies over the previous year's number. The province of Punjab has the largest number of Agricultural Societies (8,014). Then come in order Madras, Central Provinces and Berar, United Provinces and others. Out of 8,014 societies in Punjab, 7,605 societies fall under the class of Co-operative Credit Societies. The number of Agricultural Productive and Purchase Societies are small in Punjab. The aggregate amount of working capital and reserve of all the Agricultural Societies in Punjab is the largest in comparison with that of the other provinces in India.

About 600 fresh non-Agricultural Societies have been started and working during the year. There is also an increase in the working capital and Reserves of all the Societies. The dividends declared by the Societies range from 6 to 12½%. All the Societies in Assam, and some in Bihar and Orissa. It is satisfactory to note that the societies have declared a fairly large dividend during the year in which business was slack and uncertain and several limited Companies have declared low dividends. The declaration of high dividends will prove as an incentive to induce the public at large to become members of Co-operative Societies thus furthering the progress of the co-operative movement as a whole.

	No. of Societies	Working Capital Rs.	Members (Individuals & Societies
1. Co-operative, Provincial & Central Banks	442	8,23,30,315	136,111
2. Co-operative Agricultural Societies.	42,149	11,72,29,703	1.355,434
3. Co-operative Non-Agricultural Societies.	3,322	3,63,48,913	390,513

From the above figures extracted from the statements prepared by the Department of Statistics, India, already referred to, we notice clearly the enormous increase in the number,

working capital and members of Co-operative Agricultural Societies in comparison with those of the Co-operative Banks and Co-operative non-Agricultural Societies. In spite of these figures, the progress of the movement in India is very slow compared to that of the Western countries, especially England. Hence we cannot be very sanguine over the results. These figures are not commensurate with the size of India and its population. Out of about 350,000,000 people in India about 80% of the number are engaged in Agriculture directly or indirectly and there has been a cry from all parts of India, for many years past, of the poverty and the indebtedness of the ryot. The remedy for these evils lies in co-operation. The Government and the educated public must give their helping hand to educate the people in matters of this kind by the distribution of co-operative literature in the Vernacular tongue among the people, and by such other methods in order to facilitate the progress of this movement. For the progress of the Agricultural Societies a substantial increase in the number and Working Capital of the Co-operative, Central and Provincial Banks is an absolute necessity. Every endeavour must be made to start Provincial and Central Banks all over the country. The Central and Provincial Governments in India must set aside a large amount every year from their revenue to be lent to these Banks at very low or nominal interest to enlarge the activities of these banks.

Among non-Agricultural Societies we note with regret that there are only 3 exclusively Productive Societies and 284 Societies for Production and sale, while there are 884 Societies for purchase, and purchase and sale; and 2,053 Societies for credit.

A considerable increase in the number of distributive Societies for the elimination of the profiteering shopkeeper is absolutely a matter of necessity for the benefit of the consumers.

There are, we admit, very many difficulties in the way of starting Co-operative Productive Societies and hence it is no wonder that the number of these Societies is very small. An increase in these Societies is necessary not so much to eliminate the capitalist but with the view of preventing the extinction of some of the Home industries of India, which are the main support of many Indian families. Unless the producers of Home industries join together, it will be difficult for them to withstand the competition of large scale industries doing the same kind of business. The shoe-making industry, and the tailoring industry are some of those which may be profited by this kind of co-operation.

A correspondent of the "Times Trade Supplement" writes:—Last year the Ceylon Safety Match Manufacturing Company, Bambalapitiya, made a net profit of Rs. 26,004. Dividends declared during the year totalled 45 per cent. Since it came into existence three years ago the company has become possessed of a well-equipped, up-to-date factory employing two hundred workers, who manufacture about 15,000 boxes of matches a day. It now competes keenly with imported Swedish matches. To-day about a hundred women, in their own homes, are engaged in pasting up the matchboxes from blocks of suitably perforated veneer supplied to them by the company. A good worker can earn Rs. 6 a week by bringing in 15,000 boxes. With a view to increasing its profits, the company has imported new machinery and is now trying to cut out suitable veneer and match-sticks from Ceylon timber instead of importing these, as hitherto, from Japan. The Japanese material is of Siberian pine. The resinous common local woods, *hora*, *dun*, *dorana*, and *kokuna*, have been found to be sufficiently straight-grained and elastic to be suitable for match-stick making, but no definite steps have yet been taken as the action of chemicals upon the different woods is still being investigated. The Ceylon match manufacturing company now imports weekly about 1,000 lb. of chemicals from Japan. It is thought that further economy could be effected by importing the material from Sweden, and inquiries will be made by Dr. Hevavitarana, a director of the company, who is now in Europe.

The daily consumption of matches in Ceylon, which is rapidly increasing, is estimated at 180,000 boxes. Veneer and match-sticks will be manufactured locally in time, and when the hydro-electric scheme has materialized the Ceylon match manufacturing industry will be in an unrivalled position, not only to supply local requirements, but also to meet the demands of India, the Straits, Africa, and even Australasia.

The present annual consumption of matches by Ceylon represents a value of about Rs. 950,000; Malaya imports about £300,000 worth every year; the consumption of India, Africa, Australia, and New Zealand is steadily growing.

Economics in the West.

The American Debt.

London, 31st Dec. 1922.—On December 27 the Chancellor of the Exchequer, Mr. Stanley Baldwin, accompanied by the Governor of the Bank of England, left this country on a mission to the United States with the object of discussing terms for the funding of the debt owed by the British Government to the United States Treasury. The capital amount now owing is about £850,000,000 at the pre-war par of exchange, exclusive of interest accrued but not yet paid, and, as at present, the burden involves an annual payment of about £65,000,000 for interest and sinking fund. On November 30 last the arrears of interest amounted to 611 million dollars, or about £125,000,000.

Much is apparently expected as a result of Mr. Baldwin's visit to the States but it is well to remember that, although he may be a plenipotentiary, and, as such, be in a position to pledge his Government, the members of the American Debt Funding Commission with whom he will confer have no such authority, and are merely agents of their Government with strictly limited powers. It is within their province to discuss with representatives of the foreign Governments, now indebted to the United States Treasury in respect of advances made during the war, how these loans shall be repaid, but they are not empowered to reduce or modify the debt or in any way to depart from the Law of February 1922 which fixes the rate of interest at not less than 4¼ per cent and the date of maturity not later than June 15, 1947. In such circumstances it is hardly conceivable that the British Chancellor of the Exchequer will put forward at this juncture a cut-and-dried plan for the settlement of our debt. It would rather seem to be his purpose to convince the Commission of the wisdom of securing wider powers from Congress so that definite arrangements may be concluded at a subsequent Conference attended by plenipotentiaries of both Governments.

American opinion on the subject of inter-allied debts remains divided. Mr. Hoover, the Secretary of Commerce and himself a member of the Allied Debt Funding Commission, has recently been the spokesman of the party who believe that, ultimately, if not now, the European countries will be in a position to discharge their respective debts to the last cent, and that doubts as to the capacity of the Continental Allies to pay have been much exaggerated. His arguments in support of this contention are a little one-sided, and his references to triangular trade do not appear to recognize sufficiently that there is a limit to effective demand, and that an alteration in the character and direction of trade between individual countries is not unlikely to affect the general volume of international trade. The statement, moreover, that American investments in foreign countries and the other invisible items of exchange all combine to furnish a large supply of American money to Europe, which Europe could return in satisfaction of interest payments, leads to the inference that Mr. Hoover is suggesting either that the debtors should borrow privately in America to pay interest or that the capital of the inter-allied debts should be replaced by loans made by American citizens to the debtor Governments. Neither alternative solves the difficulty, for the replacement, being merely a transfer, would not, of course, operate in any way as a repayment, and the debtors would be in worse case through having to pay a higher rate of interest while the creditors would still be the same, namely, the American people instead of the American Government.

Signs are not wanting, however, that the American Treasury is prepared to recommend to Congress some modification in the existing law provided the European debtors do not seek to base their claim for relief on remission of reparations. Washington does not admit that in principle or from the standpoint of legal obligation there is any connection between the two forms of indebtedness, inter-allied debts and German reparations, although as a creditor on inter-allied debt account America would hope to benefit from large reparation payments to countries which are her debtors. Realizing, however, that large payments by Germany are quite out of the question at the moment and that the debt problem is an unsettling factor in world trade, America is interested in seeing the demand for reparations reduced to a figure within Germany's capacity, for in such case she would stand to gain both from the repayment of debt owing to her and from the resulting improvement in trade.

To what extent and in what manner the inter-allied debts will be modified has still

to be decided, but the plans finally agreed upon will no doubt provide, first, for a reduction in the interest charge, secondly, for a sinking fund, and, thirdly, for an extension of the date of maturity beyond 1947, the year fixed by the Law of February 1922. A settlement on these lines, more particularly if the rate of interest were reduced appreciably, would have important advantages. The burden of the debt charge could be brought within the capacity of the individual debtors and the capital would be preserved until automatically wiped out by the operation of sinking fund and other payments. The preservation of the capital as a reserve against future contingencies would meet with the approval of the American people, and the absence of any suggestion for reduction or cancellation of principal would probably go a long way towards facilitating a settlement.

Unemployment.

It will not be denied that the present condition of employment in this country calls for exceptional remedies. Despite the recent slight improvement in our foreign trade the volume of imports and exports is still below the level of two years ago and very considerably below the pre-war standard. Production for home consumption is also reduced probably in a degree corresponding closely to the decline in external trade, and as a consequence quite 1,400,000 workpeople are idle. Some improvement in our internal trade may be possible of attainment, but a reviving and growing foreign demand for British exports affords the only means of ultimate return to pre-war prosperity. The return, however, will be gradual and recovery slow. The world's power of production has been greatly impaired, and the process of building up will be necessarily prolonged, and until the collective capacity to produce and therefore to consume is enlarged, and enlarged permanently, we cannot expect to find profitable work for our people or markets for their products.

At present, according to the ex-Minister of Health, we are paying 100 millions a year to maintain our unemployed. This expenditure is not only unproductive, since the receipt of maintenance allowance entails no obligation or opportunity to work, but we suffer also in respect of the psychological effect of the dole system. How then can we avoid the continuance of an annual payment in this form and at the same time secure work for those who are idle? Obviously, only by creating a demand for labour which would otherwise not ordinarily arise. And if in so doing we depart in some degree from the principles which ordinarily guide our economic action, we shall nevertheless have tided over an anxious period and brought ourselves nearer to the time when business can be conducted on a more stable basis.

The gravity of the unemployment problem is fully appreciated by the Government and their intentions have been outlined by the Minister of Labour. Briefly, the proposals are: increased assistance to local authorities for road-making and other schemes; the acceleration of existing Government contracts; arrangements with the railway companies for expediting development work, and extensions of the Trade Facilities Act and the Export Credits Scheme. Under the original Trade Facilities Act, which provided for a Treasury guarantee up to 25 millions on the aggregate capital amount of loans, guarantees to the amount of 22¼ millions were given leaving authority for 2¾ millions unused. It is proposed to renew this lapsed authority, which expired on November 9, and to increase it by a further 25 millions. The existing limit of 26 millions under the Export Credits Scheme will be extended, if necessary. Hitherto the Export Credits Scheme has been availed of to a very limited extent, and probably guarantees on capital raised by overseas borrowers under the Trade Facilities Act do not exceed 5 millions.

Loans to overseas borrowers seem to afford greater advantages than capital expenditure at home, which must necessarily be unproductive for a considerable period. The principle of lending for overseas development has been long established in this country and enabled us to build up prior to 1914 a flourishing export trade and accumulate a reserve of wealth which proved of enormous assistance in financing war requirements. Since the Armistice the principle of lending to overseas countries has been resumed, but for the most part our loans have been confined to pre-war borrowers and very little has been advanced to countries lacking initial capital but otherwise well-equipped for production. Foreign loans, guaranteed as regards interest by the British Government and suitably secured, could no doubt be placed on the London market on reasonable terms and for comparatively large amounts. As the proceeds must necessarily be spent in this country the loans could not fail to provide additional employment.

Industrial Notes from the United States.

By A. T. Marks.

World's Cotton Surplus.

Washington, D.C., U.S.A., November 28, 1922.—At the present rate of cotton production and consumption the world's surplus will be entirely exhausted in another two or three years unless there is a very marked increase in production.

This fact was revealed in a detailed survey of the world cotton situation just made public by the United States Department of Commerce, as an advance bulletin of the forthcoming annual cotton report of the United States Census Bureau.

The total amount of cotton available for the year which will end on July 31, 1923, is estimated by the department at 26,286,000 bales of 478 pounds lint average, of which amount 9,536,000 bales is the "carry over" from the past year, and 16,750,000 the preliminary estimate of the Department of Agriculture for the 1922 crop.

Cotton consumption for the current year (1922) is estimated at approximately the same as the past season, namely 20,047,000 bales. Thus the carry over in sight for next July 31 is only 6,239,000 bales, a reduction in stocks of 3,297,000 bales for the year.

The carry over on July 31, 1921, was 14,752,000 bales. Consumption over production during the past year was 5,216,000 bales, reducing the carry over this July to the 9,536,000 figure.

The report further states that 60 per cent of the world's present cotton supply is of American production, with about the same percentage of the consumption of the staple produced in this country, so that the American reserve stocks are being cut down equally with those of the other great cotton-producing countries—India, Egypt, China, etc.

It is interesting to note that the carry over on July 31 of this year was distributed as follows:—In mills, storage and elsewhere in the United States, there were 2,832,000 bales; in British mills, ports and warehouses, and at sea *en route* to Great Britain, there were 1,322,000 bales; in continental European mills and ports and at sea *en route* to Europe, there were 1,739,000 bales; in India and Egypt (mostly in the former country), there were 1,375,000 bales; in and *en route* to Canada, Japan and other countries there were 2,506,000 bales.

With only a fraction more than 150,000,000 spindles in operation on October 15, 1922, Great Britain leads with 56,000 bales; continental Europe, 45,000 bales; the United States, 37,000 bales; and the remainder scattered over British India, Egypt, Japan, China, Brazil and other countries.

Assisting Farmers by Motion Pictures.

"Farm Movies" covering more than 200 separate and distinct agricultural subjects have been made by the United States Department of Agriculture, and these are now available for use anywhere in the United States by persons and organizations complying with the department's requirements and regulations. The picture stories are most helpful and instructive. The films cover subjects ranging from silo construction, cattle dipping and fighting forest fires to demonstrations of cottage cheese-making. For the purpose of preparing these film stories, the Department of Agriculture has established a motion picture bureau under the supervision of an experienced "movie" operative with several assistants.

It is announced that extensive use of the department's films is being made by county agents, farmers' organizations and home demonstrations in the field, of which latter there are a large number working under the instructions of the various bureaus of the department and located in all sections of the country.

Last year, according to reports to the Department of Agriculture, over 5,000,000 people saw one or more of these films shown. In addition to their use by the extension workers of the department, the pictures have been much in demand among state colleges of agriculture, farm bureaus, chambers of commerce and boards of trade in the cities and towns, women's clubs and other organizations, as well as commercial motion picture houses. These films are distributed by the department wherever they are wanted, the only provision being that the cost of transportation be paid by the borrower.

Radio Buses.

One of the most interesting developments of the radio telephone, and the most novel as well, has just been recorded. This is the equipment of a number of lines of motor buses carrying passengers operating in the

middle western states with radio apparatus. At this writing there are somewhat over two hundred of these passenger-carrying vehicles so equipped, with the radio operating successfully.

This innovation is the result of the keen competition and rivalry of the bus-operating concerns to obtain for their respective lines the patronage of the many thousands of tourists and travellers who annually visit many of the western states. That the venture is practical, and is comparatively inexpensive, has been fully demonstrated by rather extensive experiments, numerous obstacles having been overcome during the trial trips of the first trips so equipped.

Possessing only a two-step radio short-wave receiving outfit, the riders can distinctly hear concerts, addresses, lectures, etc., at a distance of fifteen to twenty miles from the transmitting (broadcasting) station, and this despite the obvious necessity of employing low antennæ. The latter is, however, of the most approved type, being raised about one foot above the top of the car and securely supported on uprights, and these uprights are strongly braced.

The instrument installation is made on the inside of the dash-board of the car so that the driver can "turn in" the equipment without leaving the wheel. Inside the bus a loud-speaking amplifying horn is placed, so that individual receiving apparatus is not required by the passengers.

According to the officials of the transit companies and radiophone experts interested in the project, from a scientific standpoint, several minor problems yet remain to be solved before the universal use of the radio equipment can be considered sufficiently successful to instal on all public vehicles. Notwithstanding these several deficiencies, however, all persons concerned are determined to continue their efforts and experiments until, in addition to the mere transportation, the passengers of the buses and other passengers-carrying vehicles will be given the best radio entertainment being broadcasted, and fully equal to that possible in the private home.

THE LATEST AUTOMOBILE DEVELOPMENT.

In conversation with a leading American manufacturer of automobiles, the writer, a few days ago, was told that at last the successful and practicable has been reached in the production of what is to be known as the "combination car," or open-and-closed automobile.

During the past few years probably no problem has puzzled the prospective automobile purchaser of limited buying power so much as deciding which type of car would be more desirable, the open or the closed model.

This question is now answering itself with the appearance of a new type of car which is bounding into almost instant favour among motorists everywhere—not only in the United States, but throughout the world.

Naturally, the average man who can afford to own only one car at a time desires to obtain maximum use out of what he buys. But he has long realized that neither the conventional open or closed model is satisfactory for all purposes, and has long recognized the need for something combining the advantages of the two. He is now being offered what he wants. It is known as the "combination car."

The new type takes into account the fact that the average man who drives wants as much fresh air as he can get, but at the same time does not want to struggle with the elements when they are in an "off" mood. The trouble has been right along that unless one were fortunate enough to own two machines the open car was frequently too close to nature and the closed one too far from it.

The conventional "closed" has its logical place; the open car has its niche as well. But if a motorist is limited to one type he is pretty certain to be wishing he had the other before the year is out. Those who drive both open and closed cars are in better position to speak of the advantages and disadvantages of the two types, and their opinion is invariably that each has its place according to the season and the weather, and that neither one is an all-year-round type. It is because of this that they drive two cars.

It was only logical, then, say the automobile manufacturers, to develop the combination car for the needs of the average man. It is a car that is not so heavy as to increase operating costs, not so luxurious as to make the driver feel he is still sitting in his easy chair, not so hermetically sealed as to be fresh-air proof.

Its top doesn't fold back and let the sunshine eat right in, but its glass windows are of large dimensions and when lowered give as much air as can be had in the average open car with its top up. It is rain-proof without being air-tight; attractively upholstered without looking impractical for daily use; snug and comfortable for any day, yet appropriate for a summer picnic.

Not only this, but the new combination costs only slightly more than the conventional open car, thus giving the buyer the advantages of two cars at slightly more than the cost of one. In addition, the buyer is able to enjoy much more use of such a car than he would be able to do with either a conventional closed or open model. And more complete use of a car means saving on other forms of transportation or virtually motoring more for less money.

NEW TYPEWRITER WITH ADDING MACHINE.

A remarkable invention has just been placed on the American market, which is nothing less than an ingenious attachment for a typewriter which will make it into an efficient and practical adding machine as well. Simplification of the once-complicated and intricate adding machine has progressed to the point where the machine itself may be attached to the front of any of the standard makes of typewriters and readily used in conjunction therewith.

This device made for the purpose, and which has been patented recently, is so small (weighing but little over one pound) that it does not interfere in any way whatever with the regular use of the typewriter for correspondence and other purposes. The adding machine has its own row or numeral keys, which rest just above and back of the standard keyboard of the typewriter when the adding attachment is screwed or clamped in its place. Depressing these auxiliary keys actuates the corresponding type bars and lists, or prints, the figures, and at the same time adding them and recording the total in a small space located at the right of the machine. The new attachment is to be sold at a fraction of the price asked for the regular standard adding machines, and for the purposes of a small business or office is said to be satisfactory.

ENLARGING CAMERA IN ARTIFICIAL LIGHT.

A vest-pocket camera of $2\frac{1}{4}$ by $3\frac{1}{2}$ inch size is one of the greatest and most useful companions one can have. Opportunities present themselves at the most unexpected moments, and, when one has a good lens, some remarkable pictures can be secured that are certainly worthy of enlarging. Of course, it is out of the question to carry about a large camera when one is engaged in other means of earning a livelihood.

Many photographers are believers in the "take it small and enlarge" plan, and these artists have made wonderful successes in the use of enlarging cameras and by the use of artificial light.

The greatest trouble experienced, it is said, is in securing satisfactory illumination. When opal glass or ground glass is used it takes from 20 to 25 minutes to get a print on bromide paper. This is a very long-drawn-out process and requires a lot of patience.

The more progressive photographers, professional as well as amateur, are now using a condenser which consists of a glass bottle with a spherical body. This bottle is filled with water to which are added a few drops of copper-nitrate solution, which produces a greenish tint and seems to greatly increase the actinic value of the light. Behind this globe is placed a 50-watt Edison opal bulb, and back of the light a medium strong reflector. Bromide prints are thus made in from 2 to 7 minutes.

Care must be taken, it is suggested, to have camera, condenser, light and reflector all in line, otherwise the prints may be lacking and imperfect at the corners.

For determining the length of exposure required for the various negatives, a rack is made on which are placed about six or eight negatives of various density, each negative marked with the time exposure necessary. All one has to do then, it is explained, is to compare the density of the negatives to be enlarged with those on the rack and expose accordingly. It is stated that remarkably good prints and finished pictures are obtained through this process.

One of the problems in the Germany of today, says *Time and Tide*, is the tremendous increase in the number of University students. While in the summer of 1914 there were some sixty thousand undergraduates at the German Universities, in 1921 the number had increased to eighty-seven thousand, an augmentation of some 44 per cent. When it is remembered that a large majority of these students have to maintain themselves by the work of their own hands in order to be able to carry on their studies, the phenomenon is remarkable. It can, of course, be explained. In the first place, those who made money during the war are anxious that their sons and daughters should receive a University education. The professional classes, on the other hand, have a tradition in their families that their children should attend the University.

Canadian Trade and Finance.

Montreal, 1st December 1922.—The dominant position held by the Port of Montreal, among the grain shipping ports of the North American Continent, has been illustrated this year to an even more striking degree than was the case in 1921. Last year the quantity of grain shipped from the Port of Montreal was in excess of the amount shipped from any other Atlantic port by a substantial margin, as indicated by the table which follows:—

Montreal ..	.. 138,453,980 bu.
Galveston ..	.. 94,173,049 ,,
New York ..	.. 84,698,581 ,,
New Orleans	.. 73,689,399 ,,
Baltimore ..	.. 55,314,808 ,,

The opinion was held that the quantity of grain which passed through the Port of Montreal last year was abnormally large, and that its route was determined largely by the fact that the discount on Canadian funds made it advantageous for American wheat to take the St. Lawrence route. The amount of grain handled up to the 20th of November this year, however, was 150,337,566 bushels—an amount exceeding last year's grand total by more than 8 per cent. The number of grain vessels which cleared from Montreal this year up to the 20th of November was almost 25 per cent in excess of the total for the entire season of 1921. It is gradually becoming obvious that the cheapest and most advantageous route for wheat, going to Europe, from the American as well as from the Canadian West, is by way of Montreal.

The Fordney-McCumber Tariff.

The Fordney-McCumber Tariff which finally became law in the United States on the 21st of September, and the Emergency Tariff which preceded it, have been the subject of much discussion and controversy. While it is obviously somewhat early to make any definite assertions as to the results of the tariff, a few generalizations may be of interest.

Considerable apprehension has existed with respect to the probable effects of the new tariff on certain Canadian industries, the products of which have been subjected to additional customs duties. Already a number of industries have felt its effects. For example, the movement of cattle from Western Canada to the Chicago market has practically ceased. From the Maritime Provinces we hear that the potato growers are feeling keenly the loss of their natural markets in the Eastern States. The great bulk of those commodities which we send to the United States, however, are of such a nature that they cannot be kept out by tariff barriers since they are essential to the economic life of that country. This fact has been frankly recognized in the case of important products such as pulp, and no duty has been imposed.

With relation to wheat, the tariff has had practically no effect, either in the United States or in Canada, since, in view of the fact that both countries produce more than their requirements, prices are regulated by demand, in the world markets. In framing the tariff, it probably was felt by those responsible for the farmer's policy, that the additional duty would have the effect of keeping out the relatively small amount of Canadian grain (less than 2% of the total United States production during the last ten years) that ordinarily finds its way across the line. The quality of wheat that has always constituted the larger part of such importation is No. 1 Northern, of which a certain amount is required by American millers to bring their flour up to standard grade. The tariff has had the effect of increasing the price of this quality within the United States, by 30 cents a bushel, but it has not materially affected the quantity imported by that country. This example strikingly illustrates the disadvantage to which American millers are subjected in competing with Canadian millers in the world markets.

Quotations for oats and rye in Winnipeg and Chicago continue equal notwithstanding the additional duty of 15 cents per bushel on each of these products. It is obviously only in the case of products which are not produced in the United States in sufficient volume for home needs, that increased duties will result in higher prices to the producer. A study of these facts leads to the conclusion that a measure adopted as a general measure of protection has been taken advantage of by the political representatives of certain industries to increase the prices of commodities, the production of which bears only a moderate relation to the total requirements of the country. Perhaps the most notable example of this is the case of sugar. The total production of sugar in the continental United States this year will be about 1,000,000 tons against a consumption of 5,000,000 tons. Under such circumstances it is evident that

the United States tariff cannot affect world prices to any noticeable extent, and to bonus home production to the extent of .0076 cent per pound (which is in addition to the Cuban tariff, the general tariff being largely inoperative, as practically no full duty sugar is imported), the consuming public are required to pay this additional duty on all importations from foreign countries. If we assume that, in framing the tariff, the authors had not in mind the special object of assisting the insular possessions of the United States, we come to the conclusion that in the coming year it will cost the consuming public of the United States roughly $85,000,000 to protect their home production. At last year's prices this approaches the total value of sugar produced in the United States proper. More or less similar conditions pertain to a number of other products. Here again, it will be seen that various commodities into the production of which such imports enter, will require to be sold for correspondingly higher prices, if exported.

That the public of the United States believe that group interests, as compared with the interest of the country as a whole, may have played too large a part in the framing of the tariff, seems to be indicated by the result of the recent election.

There has been much criticism in the foreign press, as well as a certain amount within the United States, of the policy of the American Government in preventing, by high tariff duties, importations from countries which are heavily indebted to the United States. Unquestionably this policy has tended to aggravate industrial conditions in other manufacturing countries, notably in England. Taking a long view of the situation, however, the results may not be entirely disadvantageous to such countries. As a result of war conditions the United States built up an enormous export trade. She would inevitably have lost a considerable portion of this trade as soon as other manufacturing countries were again in a condition to compete in international markets, but this result has unquestionably been accelerated by the increase in costs within the United States, directly attributable to the tariff. The markets in which she will be compelled to restrict her operations are probably of as great importance to her competitors as the United States market, since they are mainly in non-industrial countries, and are therefore of a more permanent nature than can be hoped for in the United States, the latter country having always pursued a policy of high protection and increased tariffs, when industrial conditions were depressed. The decrease in both exports and imports, resulting from the tariff, must also tend to aggravate the serious situation which exists in regard to United States shipping.

In the last issue of this Letter, attention was drawn to the greatly improved status of the trade between Canada and the United States. It is not suggested that this condition is due to the tariff, but it is certainly a fair inference that the new tariff has not, on the whole, adversely affected our trade. It is not the intention of this article to offer advice or criticism relative to measures which should quite properly be dictated only by the interests within the United States, but one is forced to the conclusion that the view which seems to be quite generally held, namely, that the Fordney-McCumber Tariff is, and will continue to be, detrimental to the best interests of other countries, as against those of the United States, is not well founded. If the present protection is continued for a considerable length of time, business will adjust itself accordingly, but if—and this seems probable—the increased duties will, within the next few years, be reduced or done away with, it would seem that the effects of the bill will have operated distinctly against the business interests of the United States, and correspondingly, to the advantage of other countries. A return to the tariff which was in operation before the Emergency Bill was enacted, would mean that other countries will resume trade in the United States on the same basis as formerly, and in the meantime will have obtained substantial, and probably permanent, benefits, in competition with the United States, in other markets.

The World's Cotton Production.

Only a brief survey of the cotton industry, in the various countries of the world, is required to establish the fact that an interesting and vitally important adjustment is taking place, in the relative productive capacities of the various cotton-producing countries.

In the United States, various factors have combined to reduce the annual output of cotton in the South. Foremost among these is the damage wrought by the boll weevil, whose pernicious activities are causing no little anxiety to the cotton growers. Furthermore, there has been a movement to depart from the traditional one-crop method of farming, and to introduce crop rotation.

The movement was accelerated by the fact that the low price of raw cotton, over a period, lowered profits. The combined result of these circumstances is a material reduction in the output of American raw cotton. In 1914, the last pre-war year, the average yield was .45 bales per acre. During the last three years, the annual production was only .33 bales per acre, and last year, production dropped to .27. The August official production estimate of this year's crop had to be lowered by nearly half a million bales. A study of the cotton production statistics indicates that the cotton output of the South is decreasing, in relation to the amount of labour and capital employed. In spite of the gradual increase in acreage, there is a decreasing annual output per acre.

As a result of these declines in production, the world's visible supply of cotton in the first week of November was estimated at 4,946,150 bales which is a decrease of 1,442,560 bales from the 1921 supply and a drop of half a million bales from that of 1920. Such a low world supply of cotton carries with it just cause for concern from the consumer's standpoint, unless the deficit is being made up by other cotton-producing countries. This is taking place to some extent, but not in a large enough way to fill the breach. The production of cotton in various sections of the British empire shows a gradual, if small, increase. Last year British India produced 3,360,000 bales; Egypt produced 837,000 which is much below her capacity; South Africa is developing the industry rapidly, while small amounts are produced in East Africa, Sudan and the West Indies. The grand total of this cotton is still much smaller than the American output, but it is gradually assuming larger proportions as the cotton-producing countries of the Empire develop. The strategic importance of the control of cotton both in war and in peace needs no comment.

The fact of immediate interest to Canada is that the world's output of cotton shows a decline, and it is only natural to expect an upward movement in the price of the raw material. Such a movement has been in progress for some time. An increase of six cents a pound took place in the five weeks beginning with the first of October, bringing spots to over 26 cents. This price is already more than double its pre-war average. With this increase in price, mills are well sold for three months ahead, and the immediate prospects for sustained cloth values are bright. It seems strongly probable that a new 'normal' price of cotton, considerably in excess of the old, will gradually establish itself.

Speaking at the last Saint Andrew's Day dinner, Lord Inchcape made a Reference to the Retrenchment Committee and expressed the hope that it would be able to make suggestions to reduce expenditure and that India would get back to solvency before long. Referring to the Retrenchment Committee, Lord Inchcape said he supposed he was commandeered because he was a member of a similar committee at home. He did not like the prospect but was bound to say as far as he had gone, owing to the attitude of the Departments he felt satisfied the task of the Committee would be greatly lightened. The Departments were showing every disposition to help and all were working together in a most cordial and agreeable way and he was not without hope that the result of the Committee's labours would be to suggest practical measures for reducing expenditure without interfering with efficiency. Lord Inchcape emphasised that he had not come out to suggest increased taxation and said he did not yet know if many offices in India were occupied by functionaries filling up antiquated forms which nobody read, as they found to be the case in England. What India, like every other country had to do, was to carry on administration and defence as economically as possible and avoid all extravagance. If that was done India would come out all right and he was satisfied that if wise counsels prevailed (as he was sure they would) India would get back to solvency before long. Referring to the Fiscal Controversy Lord Inchcape expressed the opinion that Protection was not suited for India with its extremely poor population, nor did he agree with the view that Protection would only be required until the industries had been established maintaining that if industry had been established under protection it would be impossible subsequently to remove the duties.

The Maharaja Gaekwar of Baroda and the Maharaja of Bikanir have agreed to serve as Chancellor and Pro-Chancellor of the Hindu University respectively *vice* the Maharaja of Mysore and the Maharaja Scindia who had occupied the two respective positions for the last six years.

Views and Comments.

BY "ECONOMICUS".

In the course of his Presidential address in the Co-operative Conference, Mr. Kesava Pillai expressed the view that "a good deal of mischief had been done to the agricultural labourers many of whom had migrated to town and to other countries in expectation of better wages." "Thus," Mr. Pillai continued, "the labour manhood of the land was being drained and their countrymen who had gone to foreign lands were not at all happy, were in a miserable condition." Mr. Pillai speaks with the authority of first hand knowledge. We could only wish that his countrymen sufficiently realized the truth of these statements and set to work to improve the economic conditions.

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We do not, however, hold that our railway system is ideal and complete, or our present condition is satisfactory. But the present methods of rehabilitation and extension do not commend themselves to us. The State goes on in normal as well as abnormal years fleecing the railway income to relieve the general taxpayer and then raises capital in the foreign market to "rehabilitate" the Railways the interest and other charges on which sending up the working expenses and consequently the fares to the immense suffering of the public. Another point of indifference was recently emphasized by the Deputation of the Indian Mining Federation which waited on H. E the Viceroy in Calcutta. Said they: "It is a significant commentary on India's railway finance that the cheapest coal in the world at the pit's mouth was beaten in its home market by foreign coal coming from thousands of miles away." The Viceroy's reply was that, though he knew that the railway administration realized that, as a general principle, it was to their and the general interest to charge low rates on movements of long distance coal traffic which would result in more industries and more railway traffic, they did not feel that conditions at the present moment were auspicious for putting this principle into practice. We wonder when the right time will come and who will make the first move, for this is not our first experience that our administrators prefer to mark time instead of moving forward in any cause.

After referring to the best method of educative work in the shape of "co-operators' festivals", etc., Dr. John Mathai, Reception Committee Chairman of the recent Co-operative Conference held in Madras, told the gathering that the co-operative movement had not succeeded much in reducing the agricultural indebtedness, nor in attracting much deposits, the would-be depositors getting more interests elsewhere. Further, Co-operative Societies have not solved the problem of long-term loans and hence could not do anything to increase the productive power of cultivators. Dr. Mathai was of opinion that Land Banks were not likely to solve the question of past debts of the cultivators as the banks would be an entirely business body and therefore some form of debenture system must be followed for the purpose. We fully endorse Dr. Mathai's criticisms and would urge the co-operators to begin a most intensive propaganda to rouse the sleepy, apathetic villager from the torpor of ages. Our experience is that the villagers, naturally shrewd and intelligent, are such an inert mass that though ideas very easily enter their heads, they seldom *act* to realize them in practice. In order to attract deposits the existing Co-operative Societies must offer greater security and show a better record of good and sound work than they do at present; the difficulty of greater rates of interest outside is not so insuperable as some suppose. Secondly, well-organized groups of Co-operative Societies must be able to issue debenture loans on the security of mortgaged property and this is likely to be useful to large landowners. But we are moving in a vicious circle in our rural economy. Those of our landowners, whose landed property would be regarded as sufficient security in any system of debenture loans, are often sleeping partners and do not want to borrow, while those who want to borrow are small owners and cultivators whose small pieces of land would be regarded as insufficient security. Co-operative effort can do a good deal to bring these together and provided there are proper *men*, proper measures will be forthcoming. But alas, how very few are the true men working in the field and how helpless, indifferent and inert our village folk.

Economic Notes.

INDUSTRIAL, AGRICULTURAL, EDUCATIONAL AND GENERAL.

In *Tropical Life* for December 1922, there may be read an article by Mr. James Nicol dealing with Sisal Decortication. The cultivation of the sisal is growing in Mysore and it behoves those interested in the industry to glance through this article.

* * *

We read with interest an illustrated article descriptive of the success of Mr. K. B. Mavlankar's as a perfumery trader in London in the *Perfumery and Essential Oil Record* for December 1922. It shows what a capable Indian can do, if he willed, in London.

* * *

The story of the famous Hope stone is unparalleled in the annals of either history or fiction. Stolen from its resting place on the breast of Sita in a Burmese temple, by a French traveller M. Tavernier, it was taken to Europe and sold to Louis XIV for two million five hundred thousand livres. It was re-cut and reduced from 112¼ to 67⅛ carats. Worn by Madame Pompadour and by Queen Marie Antoinette, it was lost during the French Revolution. It subsequently appeared in a diamond dealer's shop in Amsterdam, was again re-cut and finally reduced to 44¼ carats. The gem then passed into the possession of the Hope Family, being sold to Lord Francis Hope by an American.

* * *

A cable from the Director of Bureau of Foreign and Domestic Commerce in Washington to Mr. C. C. Batchelder, American Trade Commissioner in India, states:—The exports of the United States to British India for the month of August last amounted to one million eight thousand dollars, while the imports from India reached the total of four million dollars. The production of manufactured goods in the United States has been greatly stimulated by the accumulated demand due to the recent strikes in the coal mines and on the railroads. The consequent coal shortage made it impossible for many of the American factories to run at full capacity, and some were even forced to close entirely. The strikes on the railroads made it necessary to give preference to the usual reserves in the retail stores and to the transportation of coal, foodstuffs and articles of prime necessity and in consequence distributing centres were greatly depleted. It will be necessary for the factories to speed up production for some time in order to bring up the reserves to normal conditions. Prices are consequently slightly higher than those in the past and rates for money are fractionally higher. The banks are making increased loans for mercantile purposes, but domestic buying continues to be cautious, in spite of the fact that the labour situation is much improved.

* * *

A Travancore Press communique says:—The Imperial Institute of the United Kingdom, the Colonies and India, London, is an institution intended for the economic development of the British Empire and is maintained by contributions from the States, constituting the Empire. On several occasions the Institute has been consulted with reference to questions relating to the industrial development of Travancore; and certain products of the State have also been investigated and reported on by it. For the services so far rendered, the Institute has not demanded any fee from Government. The Director of the Institute has now offered that, if the Government would make an annual contribution of £100 (one hundred) for a period of three years as an experimental measure, the Institute on its part would undertake to furnish full reports on samples supplied for investigation, to supply technical or commercial information relating to the development of Travancore materials and to supply copies of all the publications of the Institute as they are issued. Government have accepted the offer. The public are therefore requested to take full advantage of the arrangement effected with the Imperial Institute. They are requested to take notice that in matters in which the advice of the Institute is deemed profitable they may address the Director of Industries of this State with samples for investigation, who will make the necessary reference to the Institute at his discretion and communicate to the enquirer the results of the investigation made by the Institute.

Economic Reviews Reviewed.

The Art of Economic Development.

There is, in the "Indian Journal of Economics" for October 1922, the continuation of the interesting article on the Art of Economic Development which is the seventh in the series published on the subject by Prof. H. Stanley Jevons, M.A., B.Sc., F.G.S. As our readers will readily recall, we have reviewed several of these at length in this *Journal*. In the present instalment Prof. Jevons discusses the subject under four distinct heads :—

(1) Security and Justice.—He says that the maintenance of security and administration of justice is a primary condition of the success of all economic development. In the absence of these conditions, any improvement of agriculture and encouragement of industry will not have much effect. Fear of external aggression, fear of robbery and arson, fear of illegal and excessive exactions by petty state officials and fear of unbridled exactions of landlords and their agents are the chief sources of insecurity of property. These, if unchecked, are capable of defeating all measures designed for economic progress.

(2) Human Evolution, its natural tendencies and control.—The benefits of works of economic development, says the author, will depend upon the character of the people. The development of communication, especially railways, enables the growth of commerce and later of manufacturing industries.

(3) Variety of occupation.—In the interests of the nation, a variety of industries and a variety of occupations is essential if it is to take its place in the hierarchy of nations. The need of variety of occupation is a strong argument in favour of the protection of infant industries.

(4) Regional planning.—Under the above head, Prof. Stanley Jevons writes thus :— "When attention is devoted to regional planning in India, it becomes evident that there are three distinct types of regions.—First in the order of importance and urgency of their problems comes the urban and industrial region. Of these the greatest are the tracts of the country surrounding Calcutta and Bombay and the coal fields, especially Jheria and Raniganj. Another industrial region is that including the great iron ore deposits, tapped by the Tata Iron and Steel Company which are bringing other enterprises into existence and which extends to the coal fields north and west. The regional planning of these areas is of urgent importance and upon its efficiency much of the prosperity of Calcutta and Bombay will depend.

"The second type of region comprises the great irrigation colonies where waste lands are converted into rich agricultural tracts. In fact every large colonizing scheme requires either to be treated as a region itself or to be specially planned with a view to the growth of population as part of the distinct region in which it happens to be located. The third type of region consists of the great settled agricultural tracts which are already fully populated but show no signs of industrialization. In these the problem is rather to provide most cheaply all means of communication required for the conversion of agriculture from its present primitive to that of commercial farming in which the greater part of the crops are moved from the farm to markets near or far. We may speak of these three types of regions as the "urban" or "industrial type", the "colony" and the "rural type". We shall see that the methods of planning and the objects aimed at are necessarily different in each type though the broad principles are the same. Every type of planning is indeed dominated by the principle obtaining the maximum of social advantage at the least sacrifice in disadvantage and in monetary outlay.

The Capital Levy Nostrum.

The City Editor of "The Times" says :— During the Budget Debates an attempt was made by one or two speakers to revive the notion that a capital levy was the true key to the solution of our financial difficulties. Mr. Claynes, who made an otherwise excellent speech, suggested it. As, apparently, there are well-meaning men who are still attracted by this discredited nostrum, it is desirable once more to expose the fallacy underlying the idea.

It is true, as Mr. Bonar Law pointed out in his comment on the Budget, that the burden of the national debt has approximately doubled in the last two years, since owing to the fall in prices it requires twice as many commodities to pay the interest on a loan as was the case in 1920. Yet a capital levy is no remedy. As loans fall due the interest will be reduced.

The Nature of Capital.

The economic objections to a capital levy are not difficult to grasp, when once the nature of capital is realized. If capital consisted of currency notes stuffed away in a mattress, then a levy upon it would not offer any insuperable difficulty in collection or any disturbance of the economic system. Yet capital does not consist of currency notes. This country's capital is estimated at about £15,000 millions. The vast bulk of it is used reproductively. It consists chiefly of houses, land, buildings, railways, factories, plant and machinery. If the owners were deprived of any substantial proportion of these properties, their producing capacity would be seriously disorganized and, in some cases, permanently reduced. Capital is that part of production which is saved and converted into a form which facilitates future production. Adam Smith, accordingly laid down the principle that income should be taxed, and not the capital which produces it; otherwise, capital would diminish, and income, which is the annual taxable quantity produced by it in conjunction with labour, would diminish with each amputation of the capital body. Income, when converted into capital, cannot be successfully taxed, because, in order to pay a tax on capital invested, say in a factory, money would have to be borrowed and repaid out of subsequent income. Therefore, all so-called capital taxes are, in fact, taxes on income.

The War Wealth Inquiry.

The ghost of a capital levy was laid in 1920, after an exhaustive inquiry by a special committee. Its resurrection now can serve no possible useful purpose. That Committee was appointed to examine the advisability and practicability of taxing war wealth. At the time public opinion was wholly in favour of imposing a special tax on war time increases of wealth, then estimated at about £4,000 millions. The underlying idea of a tax on war wealth was that social justice would be done if some portion of the wealth acquired in circumstances which at the same time involved the sacrifice of millions of lives and treasure should be secured for the relief of the financial burden of the war. Although the committee was genuinely anxious to satisfy public opinion on the subject, it would go no further than to say that a scheme which had been drawn up was "practicable in the administrative sense". Beyond that it would not go. It refused to recommend its adoption, and the House of Commons definitely rejected it. Since then the whole aspect of the financial situation has changed. Prices have, on an average, fallen by 50 per cent, and capital, expressed in terms of money, has been greatly reduced. Many who were wealthy then have since passed through the bankruptcy court Others have sustained a loss from which they will never recover, while practically every business has suffered losses of varying amount in the past two years. Further, the depression in trade has been so severe that income has fallen off very heavily. Hence, taxation, burdensome when trade was good, is intolerable now that trade is bad. We have just obtained a slight remission of taxation, and to increase it once more, under any guise, would be suicidal. Labour would gain absolutely nothing from a proposal which, if adopted, would cause a violent disturbance of business. The solution of our present difficulties lies not in fresh taxation of any kind but in a reversal of the policy pursued by the Government in the past two years. What we require is a constructive trade policy, coupled with a far-sighted financial plan, which will secure the increased production which alone will provide the additional capital out of which we can fund the existing debt on a lower basis. It should be noted that money borrowed during the war at $5\frac{3}{8}$ per cent is being repaid out of moneys borrowed at $4\frac{1}{2}$ per cent. Savings running into many millions have already been effected.

Topics in the Journals.

1. The Madras Bulletin of Co-operation (Dec. 1922).—Agricultural Colonies and Tenancy, Co-partnership Societies in Burma.

2. International Review of Agricultural Economics (October 1922).—Italy: Agricultural Co-operative Purchasing Societies.

3. Lucknow University Magazine (Dec. 1922).—The War and the Indian Exchange Situation.

4. Bombay Co-operative Quarterly for December 1922.—Denmark: A Co-operative Commonwealth.

Men of To-day.

Mr. Saklatwala, M.P.

V. M. Pavar writes in the "Bombay Chronicle":—Shapurji Saklatwala's great victory in North Battersea must have come as a welcome but unanticipated news to his friends and the general public of India. His activities in England for various reasons scarcely received the publicity or recognition in India which he rightly deserves. He goes into Parliament as a Labour member with a big majority and that too from a London constituency, showing his popularity and the appreciation which his work receives in the Labour circles and with the people of England. When Shapurji first received the invitation of North Battersea it was a great surprise to him and his friends though his work in the Labour circles during the last 15 years fully entitled him to this recognition of his work. The voters of North Battersea by a huge majority of 43,000 votes adopted him nine months ago as their safest candidate for the parliamentary election. It may be recalled that Shapurji's constituency returned John Burns for 16 years and some of the most well-known names had very strong claim over this constituency. John Burns, Earnest Bevan—great chief of the Labour Party—Col. Lynch M.P.; John Shopard—great chief of the Co-operative Movements in England—Mrs. Despard, sister of Lord French, and many other had very strong claims on this constituency, but the voters recognizing Shapurji's work have elected him.

Shapurji was born at Navasari on 28th March 1874. His mother was the elder sister of late Mr. Jamshedjee Tata. Shapurji was educated at St. Xavier's School and College and was brought up as a member of the Tata family. Jamshedji picked him out as one of the ablest members of the family and prophesied a great future for him. Shapurji's early life was spent in training in Jamshedji's office where his shrewd observation of practical life and his great intellectual activity found ample scope. It was Shapurji pioneer work carried out by the request of Mr. Jamshedji Tata that founded the iron and steel industry in this country. Shapurji's hard life in the jungles in search of iron and coal deposits so shattered his health that all hopes of his life were given up. He had to remain on a stretcher and was unable to sit up in the bed. He was sent by the Tatas to England to improve his health and then to read for the Bar. Shapurji never succeeded in academic career, not because he was mentally too poor but he had at an early stage exhibited his natural tendency to strike out of the accepted codes. For instance before appearing for the B.A. examination at the Bombay University he applied to his examiners in Political Economy to allow him to say what he wanted to say on the question instead of what Adam Smith had to say on the subject. Naturally such a request was refused, and he left College without a degree. Shapurji's life in England since 1905 has been a series of most interesting chapters in the biography of a man who has faced superhuman difficulties in fulfilling his honest convictions. At every stage he has protested either in public or private life against the accepted orthodox ideas. This blunt but honest expression very often called by his friends as 'tactness,' has led him into very serious difficulties both socially and politically. He has, in spite of all these difficulties, maintained his ground and proved true the prophecy of his late uncle, Mr. Jamshedji Tata. After making an attempt or two at the Bar he settled in Manchester in 1908 where he got into touch with the foremost members of the Labour party. Strenuous efforts were made in his early political life to extinguish his political career. Shapurji's popularity with the British Labour Party so rapidly increased that he was requested to join the Indian Labour Party which was well in touch with the small intellectual Labour Party in the Parliament. His work received the appreciation of Keir Hardie with whom he worked for the real freedom of the toiling and poor masses. As far back as 1906 the revealed and strongly impressed upon the Labour Party the true state of Indian Labour and showed how British imperialist interests were founded and held for the benefit of commercial profiteers. He

steadfastly impressed upon the British Labour Party that no political or economic purpose for mass independence would be realized without organized labour. While he admitted the right of all Indian political movement to fight for the freedom from foreign yoke, he honestly and conscientiously believed that the real salvation of a suffering people has to be worked out by the working classes, and that unless the working classes obtained the sympathies and co-operation of workers of all countries such a salvation would be difficult. Shapurji began to measure his strength from 1910 and onwards with the foremost politicians of the country and his pronounced views provoked from time to time lengthy comments in the British Press. Combined attacks were made by the British Scotland Yard and the India Office to bring to an end his political career, but being honest to the core and of a fearless disposition he maintained his position and fought out his case against these two bodies so bravely that he made Sir Bazil Thomas, the Head of the Scotland Yard, express the highest opinion regarding his integrity, capacity and fearlessness.

Not having been adopted by any public political body in India Mr. Saklatwala's opinion found very slow response, but gradually his influence began to be accepted and made a lasting and effective impression upon the Labour leaders of Great Britain. The result has been the recognition of the Indian Labour's claims to be heard chiefly through his instrumentality. The most important and gratifying result of his activities has been the recognition of his work by the Lancashire Labour members, who recently passed a resolution supporting the claim of the Indian National Congress and upholding its activities as legitimate. Mr. Chamanlal, who is well-known in Indian Labour circles, received his training from Mr. Shapurji and under his guidance the work which Shapurji started has so rapidly advanced in India, that those who are in touch with Indian industrial and Labour problems will readily realize what a powerful influence he has exercised silently but effectively from England.

Shapurji's association with the Khilafat movement, the Irish movement, and the Russian question and his propaganda in the Labour circle, became so dangerous for him, that at one time he was informed that he would be sent out of England by force. He set the ball rolling for organized Labour in India, but his task was not very easy. Those who came in touch with him did not grasp its great value and significance for India's own emancipation. The Congress deputation which arrived under the leadership of Lok. Tilak came in very close touch with him and received from him all the support which his growing influence obtained in parliamentary circles. When the Congress deputation held a public meeting in England Mr. Shapurji moved an open amendment that the only cure was a complete and entire boycott of the so-called reformed Council. The London amendment of Shapurji was opposed by the Congress leaders but the present position had showed that Shapurji was then far in advance his time.

Endowed with great intellectual powers and boundless energy Mr. Saklatwala has acquired a national reputation in British Labour and Social circles and there is a constant call on his time and service from all parts of the country to educate British Public on Indian questions. In public and in private life Mr. Saklatwala is a man of great open-mindedness and impatient of orthodox hypocrisy. Mr. Saklatwala himself, though he belongs to a great capitalist family, has suffered at the hands of his friends and well-wishers more than any person placed in similar circumstances. He led a poor life because he has made great personal sacrifices in upholding what are his honest opinions and his high sense of duty to India and the cause of Labour. In the political life of India he aspires to its advancement which in the industrial sphere the late Jamshedji succeeded in achieving. Though Shapurji may not have received the favours from the hands of his capitalist friends, he will, I hope, continue to give to the country the best that is in him.

The London correspondent of the *Statesman* writes :—There is a gradual appreciation by the market of the teas grown in Southern India. The companies engaged in this business have usually embarked upon rubber-growing as well, and after passing through a very difficult period the recovery in the tea industry has brought them relief just when it was most needed. The present outlook for these estates is better than it has been for some time past and it is noticeable that the tea produced has shown a marked improvement in quality lately.

Books in Brief.

SHORT REVIEWS OF RECENT BOOKS.

The World's Monetary Problems.

Two memoranda by Gustav Cassel. Published by Messrs. Constable & Co., Ltd., London and Bombay.

Gustav Cassel's memoranda have won a deservedly high fame in connection with the rehabilitation of the world's monetary position. These momoranda have been given wide publication in the world's press. There is so much in them that is arresting that they deserve to be republished for even wider circulation in a less ephemeral form. Messrs. Constable & Co. have, therefore, in our opinion, done well in issuing these memoranda in book form. Mr. Lloyd George was so much impressed with them, while still Premier called them "brilliant" documents. This was no rhetorical description of the memoranda. Any one who reads through in their present handy form will endorse Mr. George's estimate of them.

Present-day Banking in India.

By B. Ramachandra Rau, M.A., Lecturer, Calcutta University. Published by the Calcutta University, Senate House, Calcutta.

This book fills a desideratum. There is no handy book giving in one conspectus the present position of Banking in India and how it has been worked up to. Mr. Rau writes to develop; not to merely criticise. His book which deals comprehensively with the Indian banking system, should tend to the reforms he advocates. Publicists in India have much to learn—and even unknown—in regard to banking and this book by Mr. Rau will help them to do it with ease.

Perfumery and Essential Oil Record Year Book and Diary for 1923.

Published by Messrs. G. Steel & Co., Ltd., 8, Lesle Street, Lincolns Inn, London, W.C. 2. Price 1*s.* 6*d.* net.

Once again we are glad to welcome this *Year Book and Diary*. It is thoroughly comprehensive of the various phases of the essential oil industry. Besides the Calendars for 1923 and 1924, there are included in it the following:—Review of work on Essential Oils, Perfumery, etc., Analysis of Essential Oils, Yields of Essential Oils, Constants for Normal Essential Oils, Times of New Crops, The Applications of Essential Oils, and List of Books on Essential Oils, etc. No dealer in or importer or exporter of Essential Oils can afford to be without a copy of this valuable publication.

Acknowledgments.

1. Mysore Agricultural Calendar for 1923. Price 1 anna.
2. Co-operation in four Indian Provinces.

The Emigration Act, 1922, finally puts an end to the former system of indentured emigration, and provides machinery for the future control of emigration. It applies to all persons who leave India under an agreement to work for hire in another country or who are assisted to leave India for the purpose of working for hire or engaging in agriculture in another country. According to information published by the International Labour Office, local governments will appoint protectors of emigrants whose duties will be to protect and aid emigrants, and they may appoint an advisory committee to assist any protector. The Governor-General is also given power to appoint agents in foreign countries in order to safeguard the interests of Indian emigrants. According to the draft rules which have been published, suitable accommodation must be provided for the emigrants, both in the areas in which they are recruited and at the port of embarkation. This will be inspected periodically. All emigrants must be examined before departure by the medical inspector of emigrants. The duties of the agents who are to be appointed by the Indian Government abroad will be to obtain information regarding the welfare and status of Indian immigrants, to protect and advise these immigrants, to inspect immigrant ships on arrival, to visit places where Indians work and reside, and to submit annual reports.

Economic Development Board.

PROGRESS REPORT.

Board of Education.

The following is a summary of the Proceedings of the Fifteenth Meeting of the Board of Education held in the Vice-Chancellor's Room, Central College, Bangalore, on Saturday, the 18th November 1922, at 3 P.M. Nineteen members were present and Dr. Brajendranath Seal, M.A., PH.D., D.SC., Chairman, was in the chair.

1. Standardisation of equipment in Girls' Schools.

Suggestions and modifications received from some of the members of the Women's Education Sub-Committee in the matter had been circulated to the members previous to the meeting.

The Chairman explained that the proposals of the Inspector-General of Education about the standardisation of equipment in Girls' Schools had been referred to the Women's Education Sub-Committee who had sent up their individual reports. They agreed to the proposals of the Inspector-General of Education with the following modifications which suggested the provision of :—

i. Desks with lids and chairs suited to the heights of the girls.

ii. Sets of pictures of famous artists and also pictures of famous people, men and women, great paintings and interesting scenery in addition to charts of Physiology and Botany, etc., in order to relieve the dull monotony of the school wall.

iii. School museums, specimens being provided by the pupils and the staff.

iv. A small book-shelf to encourage pupils to bring their own private books for circulation among their class-mates.

RESOLUTION I.—The recommendations of the Inspector-General of Education be *accepted* by the Board, with the above modifications.

2. Medical inspection of Schools and education of defectives.

Notes by Dr. B. G. S. Acharya together with suggestions from Dr. F. Noronha and Mr. M. S. Mohiyuddin had been circulated among the members beforehand.

RESOLUTION II.—*Resolved* that, in the light of the remarks made by the Chairman and in consideration of the Madras and Calcutta schemes, the Sub-Committee be requested to make a detailed investigation and send up a report in the matter for the consideration of the Board.

(*N.B.*—The members of the Sub-Committee, *viz.*, Drs. B. G. S. Acharya and F. Noronha and Mr. M. S. Mohiyuddin were allowed to attend the meeting when the subject was discussed.)

3. Consideration of the principle of employing married women teachers in schools.

RESOLUTION III.—*Resolved* that the question be dropped.

4. Ascertainment of the best tests of ability of pupils in schools.

Dropped as this would form part of the scheme of medical inspection.

5. Drawing up a systematised scheme of Auto-Education adapted to local conditions for Primary, Lower and Upper Secondary Schools.

RESOLUTION IV.—*Resolved* that the question be referred to the Inspector-General of Education to be taken into consideration in connection with the experiments on 'Term Promotions' and 'Free Study Periods,' etc.

6. Official Memorandum No. 301–4, dated the 20th August 1922, from the Secretary, Economic Development Board, placing a sum of Rs. 1,500 at the disposal of the Board of Education for "Experiments" during the current year.

The Inspector-General of Education suggested that the amount might be spent on experiments on mental and vocational tests.

RESOLUTION V.—*Resolved* that the amount might be spent partly on the training of Panchamas in handicrafts and partly on experiments in mental tests in selected schools.

* * * * *

12. Letter No. 870, dated the 15th November 1922, from the Secretary, Economic Development Board, forwarding an extract of the Resolution of the Economic Development Board, dated the 4th November 1922, relating to the administration of the Backward Class scholarships and requesting that

the whole question be considered *de novo* by the Board of Education and their recommendations submitted.

RESOLUTION VI.—*Resolved* that a Sub-Committee, as under, be formed to investigate the matter in detail, with power to consult such others as the Committee may desire :—

1. The Inspector-General of Education
2. Mr. K. Chandy. (Convener).
3. ,, S. Venkatesiah.
4. ,, M. Subbiah.
5. ,, G. A. Kalami.
6. ,, D. Kongadiappa.
7. ,, G. Paramasivaiya.

V. SUBRAHMANYA IYER, *Secretary.* B. N. SEAL, *Chairman.*

India loses the services of an able electrician by the departure from these shores of Mr. J. W. Meares, C.I.E., who retires from his office of Electrical Adviser to the Government of India on the expiry of eight months' leave. In the reports of the survey which he has conducted throughout India during the past few years as Chief Engineer of the Hydro-Electric Survey of India, Mr. Meares has prepared a valuable record of over a hundred water power sites and pointed the way to great possibilities in India of industrial development which is largely bound up with the prosecution of hydro-electric schemes. A member of the Council of the Institute of English Engineers and of the Council of Indian Engineers, Mr. Meares was a valued authority in electrical circles in Bombay and Calcutta. His many friends will wish him *bon voyage* and many years of well-earned leisure.

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The Mysore Economic Journal

A Monthly Periodical devoted to the Discussion

of all Economic Topics of Interest

Vol. IX MARCH 1923 No. 3

Reconstruction in Europe.

By Albert J. Saunders, M.A., F.R.Econ.S., American College, Madura.

During the year 1922 "The Manchester Guardian Commercial" of England under the General Editorship of John Maynard Keynes (St. John's College, Cambridge) has been publishing an especially fine series of economic studies under the general caption—Reconstruction in Europe. I have several of those numbers before me as I write, and shall refer more especially to section five—National Finances of Europe, and section six—The Peasant Revolution in Europe.

As to the scope and aim of this series the promoters say: In spite of Genoa, in spite of the Hague, the Problems of Reconstruction in Europe remain as complex as ever, and as difficult for the ordinary man to grasp. "The Manchester Guardian Commercial" in its series of special numbers has set out to survey the conditions that enter into the disordered state of European industry and commerce.

The enterprise is the most serious and comprehensive contribution any newspaper has made to this, the greatest task before Europe to-day. Mr. J. M. Keynes, the General Editor, has enlisted the services of the highest authorities of Europe—statesmen, business men, economists, historians, distinguished writers and thinkers. The numbers that have so far appeared have a world circulation and have been published in the chief languages of Europe—English, French, Italian, German, and Spanish. The articles have been widely quoted in the world's press, and as the reception of the first number among the delegates at Genoa showed, are being closely followed by leading statesmen and business men of all countries.

The numbers deal with Reconstruction in Europe in all its phases. They have no propagandist aim. They seek to state problems simply; to indicate on what lines relief and reform may come. Economists and technicians may know the remedies, but they must persuade politicians and Governments, and Governments will not heed until they feel the pressure of public opinion. The aim of "The Manchester Guardian Commercial's" enterprise is to enlighten and form public opinion. The effort is one that the business man cannot neglect, for it points out to him the causes that are holding back trade, and suggests how he can play his part in helping to recreate stability and confidence.

In section five there are a number of exceedingly interesting and informing articles on The National Finances of Europe. Mr. Keynes treats of Inflation as a method of Taxation. He says: A Government can pay its way, even the Austrian Government or the Russian Government, by printing paper money. That is to say, it can by this means secure the command of real resources—resources just as real as those obtained by taxation. The method is reprobated, but its efficiency cannot be disputed. A Government can live by this means when it can live by no other. This is the form of taxing the people which it is most difficult to evade and which even the weakest Government can enforce when it can enforce nothing else.

Inflation expresses itself in three ways: Governments print enormous quantities of paper money; the people are unwilling to hold that money except for the shortest possible time, which means the velocity of circulation; and the last stage is when a country

dispenses with the use of money altogether as was attempted by the Russian Soviet Government.

Mr. Keynes continues: It is common to speak as though, when a Government pays its way by inflation, the people of the country avoid taxation. This is not so..... what a Government spends the public pay for. There is no such thing as an uncovered deficit.

In this number Professor Sidney Webb, M.P., has an informing article on "The Financial Policy of the British Labour Party". His summary is stated as follows:—

I will limit myself to four main planks of the platform on which every Labour party candidate stands, and about which he does his best actually to educate his constituency. These are the war debt redemption levy, the restriction of indirect taxation to commodities not entering into the national minimum of civilized life, an actual extension of the system of grants-in-aid from the Exchequer to local authorities, and the positive promotion by Government expenditure of such national necessities as universal education, public health (including particularly housing and maternity care), and the prevention of unemployment.

In the article "The Financial Situation of France—How to Remedy it?" M. Joseph Caillaux (Ex-Prime Minister of France) says that France's financial position is very alarming, and necessitates the balancing of national expenditure and income as soon as possible. He advocates two methods—a reform and an increase in some quarters of the Income-Tax and the absolute necessity of receiving the war indemnity from Germany.

There are also a number of well-written articles by experts on the financial situation of nearly all the countries of Europe, such as —Germany, Italy, Jugoslavia, Rumania, the Baltic States, Poland and Turkey.

I can only refer to a series of most interesting studies on Tariffs and other Hindrances to the movement of goods, mentioning three especially—Sir Josiah Stamp's article, The Freedom of International Investment in Europe; H. Parker Willis' The Tariff Situation in the United States; and J. M. Keynes' The Consequences to Society of Changes in the Value of Money.

Each number has a carefully prepared series of graphs showing the barometer of general business conditions in Europe and the United States.

The barest mention must suffice for section six of the series. It deals with Population, Agriculture and Food Supply, and the Peasant Revolution in Europe. To my mind the most important article in this number is: The Agrarian Problem in Russia, by Louis Levine. He says:

Summing up the results of the redistribution of land among the peasants of Russia, Scheffler, one of the leading Soviet agricultural experts, is forced to conclude that "it has not solved the agrarian crisis." One more of the century-old illusions shared by all brands of revolutionists shattered by the experience of the last three years! One more symbol of the popular craving for a higher life outgrown in the very process of being realized!..... It is considered that throughout Russia 86 per cent of the land fund and 80 per cent of the farm equipment of the former private and demesne lands passed into the hands of the peasants. In thirty-six provinces the peasants have increased the area of usable land in their possession from 80 to 96·8 of the total available. In other words, the peasants have realized their long-cherished desire of driving the landlord from the land. At last they are in sole possession of practically all the available land under cultivation.

But at what a cost! Levine describes with telling illustrations from Russians themselves the heavy economic losses, the social and cultural costs, which the Revolution has meant to Russia. The situation is summed up by a writer in the "Izvestia" (February 4, 1922) in the following words: "The old, pre-war, pre-revolutionary village is coming back. Once more the youth is drinking. Once more there is wild hooliganism, quarrels, fights, kniving, broken heads, sides ripped open, murders. As if all the cultural work done in the village by the Revolution had been wiped out." "Everything in the village is as before. Nothing changed." The fact is, continues Levine, that the Russian Revolution has achieved as much as any revolution ever can. It has let all the combustible and inflammable social material accumulated in the course of centuries burn itself out in a blinding blaze of fury and glory. The pent-up emotions flared up and consumed with eager tongue all the old ideas and hallowed institutions which seemed to the people the chief obstacle in their struggle for more power and possession. In the general conflagration much that would have value under all conditions went up in smoke.

Agriculture in Mysore, 1920-21.

By "Rusticus."

Circumstances over which the Editor of this JOURNAL has had no, and the Editor of this JOURNAL has very little, control have prevented a review of the activities of the Mysore Agricultural Department during 1920–21 from appearing in these columns at an earlier date. But, even at this late hour, something must here be said about those activities not only because the MYSORE ECONOMIC JOURNAL is a fit and proper place for comment on them, but also because Dr. Coleman's most stimulating Report is of the greatest interest to agriculturists throughout India. Every section of the Department had substantial progress to record even in a year when agricultural conditions were distinctly unfavourable, the southwest monsoon being very late and the northwest almost a total failure.

Mysore is, we believe, the only part of India in which ragi is the most important crop. The Botanical Section of the Agricultural Department is, therefore, rightly devoting much attention to the evolution of improved strains of it. It has made over 600 individual plant selections. Some of these have proved very high yielders and the best of them in the year under review gave a yield of 90 per cent more than Hullubile, the best of the local varieties. It is not clear from the Report whether seed of this strain has yet been given out to cultivators but the distribution of seed of the improved strain known as Hebbal 22 commenced in 1917–18. In 1920–21, 7,500 acres were covered by this variety and Dr. Coleman estimates the increased return to the ryots at Rs. 1.12 lakhs. An even better financial result is estimated from the distribution of improved varieties of sugarcane. The Indian Sugar Committee expressed the highest opinion of the cane breeding work which is being carried on at Hebbal, an opinion which is entirely confirmed by the results obtained during 1920–21. There is no part of India where the introduction of improved varieties of thick canes has made greater progress than it has in Mysore. There can be no doubt that one of the reasons for the commanding position of Java in the sugar world is the constant succession of new varieties of cane put out by the Research Department which the sugar industry in that island maintains at its own expense. Mysore is following this example. Two seedlings bred from Mauritius canes at Hebbal, HM 312 and HM 544, have given better yields there than Red Mauritius, a cane which in turn has, for a number of years, given a yield higher by about 25 per cent than the local Patta Patti. Dr. Coleman speaks very highly of HM 544, a practically white cane considerably richer in juice and also more vigorous than the Red Mauritius from which it is derived. Both this and HM 312 have been tried in forty different localities in the main sugarcane areas and have given uniformly favourable results. Dr. Coleman thinks that, in a few years, HM 544 will replace Patta Patti throughout the eastern part of the State though whether it will replace Red Mauritius in the west remains to be seen. The demand for setts of the improved varieties is now much greater than the supply which shows that the Mysore ryot knows a good thing when he sees it. 2,500 acres were under these varieties in 1920–21 and the increased return to the cultivators who grew them was estimated at two lakhs of Rupees.

There can be nothing which gives the Head of an Agricultural Department greater satisfaction than the successful introduction of a new crop. Dr. Coleman has this satisfaction, for there are 2,500 acres now under groundnut in the Chitaldrug and Shimoga Districts which, before agricultural propaganda started, grew practically none. Groundnut has at least three advantages. It is a valuable crop as is shown by Dr. Coleman's estimate of Rs. 1¼ lakhs as the addition to the income of the ryots who grew it in 1920–21. It is most useful as a rotation crop to ragi and, thirdly if a short season type is grown, it is possible to raise another crop after it is harvested.

Many and various were the diseases studied in the Mycological Section which, unfortunately, was greatly handicapped by shortness of staff but its most important work, except the study of the spike disease of sandal which is not making much progress, continues to be the fight against the koleroga disease of arecanut which was more than usually severe during the year. That this disease can be stamped out has been shown by the experience at the Agumbe experimental station which has remained free from it though it is seven years since the trees were sprayed. Two other gardens have also continued free whilst, at

the Kerodi garden, a light attack was promptly got under. Till recently, sprayers were difficult to obtain and those ordered early in 1918 did not arrive in time to be of any use during the year. But the Department made manful efforts to make good the deficiency by an extended use of its own sprayers and of those borrowed from private owners and, in the end, 420 acres were treated against 300 the previous year. The arrival of 200 more sprayers from England enabled this figure to be increased to 750 in 1921 and it should not be long before koleroga is practically a thing of the past in Mysore.

That the Mysore Agricultural Department is eminently wideawake to agricultural developments all the world over is shown by the attempt which is being made to ship live specimens of the lantana seed fly from the Hawaian islands. This is such an interesting item of work that it deserves a somewhat full description. The lantana seed fly is one of a number of insects which have been introduced into Hawaii to control lantana. It lays its eggs in the fruits of the lantana. The larvæ destroy the developing seed and thus help to destroy the most fruitful agency for spreading this pest. As the life cycle of the insect only extends over a fortnight, the infested seeds intended for Mysore had to be shipped in cold storage. They were despatched by Dr. Kunhi Kannan, the Senior Assistant Entomologist, who has been studying entomology in Egypt, Italy, England and America, and arrived safely. 250 flies emerged and have been put out on lantana. When the Report was written, it was too early to say whether the introduction had been successfully accomplished but it has, at any rate, been demonstrated that the insects can be imported into this country. The first attempt to do so was made ten years ago by Dr. Coleman himself but, at that time, there was no direct line of boats from America to India. The shipment could not, therefore, be kept continuously in cold storage and the material arrived dead. Dr. Coleman is clear on two points. The first is that there is no danger of the fly attacking any host plant other than lantana. This is very important as well meant efforts to eradicate one pest have, before now, resulted in the spread of an even greater one. The second is that there is no likelihood that the introduction of the insect will lead to the disappearance of lantana. The best that can be hoped is that it will materially check its spread on Mysore pasture lands and thus help to keep it under control.

There is evidence on every page of this Report of the extent to which the Mysore Agricultural Department has succeeded in gaining the confidence of the agriculturists throughout the State. Nowhere is this more apparent than in the paragraphs describing the distribution of improved implements. Dr. Coleman says that, if supplies had been available, the Department would have been able to sell 3,000 improved ploughs. Unfortunately, the foreign suppliers let the Department down badly and the 1,500 ploughs ordered in July 1920 did not arrive until the ploughing season was over. Spare parts ordered at the same time also failed to arrive. It would have been interesting to know who the defaulters were and whether it was the United Kingdom or America which was responsible but Dr. Coleman mercifully refrains from giving details. His statement of the case shows how essential it is to the agricultural development of India that improved implements and their spare parts should be manufactured on a large scale in this country. Jamshedpur is, we believe, doing something in this direction but it will be a long time before it is capable of filling the gap to any great extent. Dr. Coleman candidly admits that plough shares and other spare parts manufactured in Mysore are inferior to the imported articles. They are taken only with the greatest reluctance by Mysore agriculturists, who have evidently well digested the lessons taught them by the Department. Dr. Coleman says that, owing to the difficulties in obtaining supplies, the sales of improved implements were somewhat less than those of the previous year, but there is something wrong either in this statement or in the figures he quotes in support of it. The latter show a total of 5,129 implements sold against 3,725 the previous year, the number of ploughs sold being 1,055 against 976.

The work done in the Live Stock Section on the improvement of sheep deserves mention. A selected flock of Mysore ewes has been gathered together on which Merino rams imported from Australia have been used. The clip of the hybrid sheep has given an average of 2 lbs. 10 oz. of wool against an average of 1 lb. per head for the country ewes. As the latter were specially selected for their fleece, the extent to which the total wool output of the State can be increased by the continuance of this work is apparent.

It is pleasant to see that the Mysore Agricultural and Co-operative Departments have such close and cordial relations and also that the Mysore Agricultural and Experimental Union is doing such good work. Fifty-five co-operative societies took part in the work of distributing improved seed as well as in other work connected with agricultural improvement. Agricultural Associations in British India have hardly been the success it was at one time hoped they would be. The enthusiasm with which they were started did not last and those which are left are, with few exceptions, lifeless bodies. The Mysore Union has been formed on different lines and seems destined to a better fate. It is a non-official organization consisting of progressive and educated landholders and members of the Departmental staff numbering 224 in all. Its main function at present is to carry on experiments in co-operation with the Agricultural Department. Its members who are drawn from all parts of the State are engaged in testing implements, seeds, manures, and methods of cultivation under the most varied conditions of soil and climate. About a hundred of these tests were being carried out in the year under review and very valuable information was obtained therefrom. The Union has its own Journal which is published both in English and Canarese and has a subscription list of 460.

Did space permit and were a review of Dr. Coleman's Report for 1921–22 not so imminent, there is much else in this most interesting Report on which we should like to comment. Dr. Coleman concludes it by saying that the staff of the Mysore Department of Agriculture is a body of men with whom he is very proud to be associated. We are equally certain that the Department has every reason to be proud of its Head.

Cholam for Malting.

At the present time the malt used in brewing, or for the preparation of malted foods, consists almost exclusively of barley malt. As, however, the supply of barley in Southern India is exceedingly limited, it was obviously desirable, if such industries were to be encouraged, to ascertain whether some other commonly occurring grain might not be substituted for barley.

With this object in view, comparative tests were carried out by the Chemical Department using rice, cholam, ragi, tenai, cumbu and maize. The results of this investigation soon showed that of these grains cholam was by far the most suitable, being capable of yielding a malt of higher diastatic power. In view of the encouraging nature of these results, further work was at once instituted to ascertain the correct condition under which malting should be carried out with cholam, for it by no means followed that the same conditions which applied to barley would prove most suitable for cholam. These experiments have met with a very considerable amount of success and there is little doubt that a malt can readily be prepared from cholam suitable in every way for use in the preparation of malted foods. The utility of cholam malt for brewing purposes is, however, a more doubtful proposition, very definite properties being required in a malt designed for this purpose. Experiments are, however, continuing on this aspect of the question. The demonstration, however, that cholam malt can be successfully used in the preparation of malted foods which are so much in request at the present day, has aroused considerable interest and a very large number of inquiries have been received on the subject. Many of these inquiries indicate (says the Monthly Digest of the Madras Agricultural Department) that there are persons willing to take up an enterprise of this kind in this country and provided such a manufacture were started on a small scale in the first place, expanding as the correct manufacturing conditions were ascertained, there seems little doubt successful results could be anticipated.

We have received a copy of the 39th Annual Report of the Srinivasa Mandiram and Charities at Bangalore. The report is a record of useful work by this old and respected institution during the past three years. We would specially compliment Mrs. A. Singamma on her admirable work. The institution stands in need of help, and monetary contributions may be forwarded to her addressed to Srinivasa Mandiram, Balepet, Bangalore City P.O.

American Foreign Investments and Foreign Policy.

By Virgil Jordan.

Recent events have pointedly drawn the attention of the American public to the increasing scope and complexity of the problems of foreign policy raised by the growth of American financial interests abroad. The sudden decision of the Administration, after its consistent coyness about participating in Europe's political conferences, to have an American observer at Lausanne, and the unwonted activity of this observer, is to be partly explained of course by American humanitarian interest in the Turkish problem. Vast sums are being gathered and spent by American citizens and the Government for the relief of distress in these regions and it is only natural that the Government should be interested in the settlement of the causes of these difficulties.

Nevertheless the relatively sudden abandonment of her aloofness from foreign political councils is in a large part due to the immediate and direct interest which the United States has in commercial and industrial privileges in the near East. Humanitarian considerations were no less compelling in the situation of Europe since the war, but in the Turkish problem there were additional factors sufficiently strong to dictate for the first time our participation in its settlement. Indeed it would almost seem as if the activity of the Government was not considered sufficient to take care of the economic interests involved, since private individuals and organizations have shown an even greater and more direct concern in the Lausanne Conference, and the event has precipitated a kind of small scale international conflict between the Standard Oil Company and the American representatives of an ex-sultan's heirs. All of which has served to raise anew in the public mind the question as to what part American financial and business interests really play in her foreign policies. The recent action of Mexico in appealing to South American opinion against an alleged interference by the State Department in her treatment of the oil question, and the Conference of South American powers now being held in Washington under American auspices have stirred up additional curiosity about the direction and implications of American diplomacy.

For some time past there has been a great deal of interest in the reported activity of the State Department in supervising the raising of loans by foreign governments from private sources in this country. The State Department has publicly announced that it would like private financiers to consult with it before engaging in such foreign investment enterprises where foreign governments are directly concerned, in order that it may be ascertained whether such loans involve any possible dangers to American foreign policies. How far such control extends it is impossible to say, but to-day it is the practice of American banking houses to inform the government of applications for loans from abroad and practically no foreign securities are offered for sale in the United States, at least on a large scale, before the bankers have found out whether the Government has any objection from the view point of public policy. The Government takes pains to assure itself that such loans will not find their way into the hands of rebel factions or be used for purposes of which it does not approve.

The implications of such a procedure are naturally far-reaching, since the flow of investments will inevitably tend to be influenced not only by the conditions of international rivalry in regions being exploited, but also by the political views of the Administration in power. The long-drawn-out debate on the soundness of American policy toward Russia is a case in point, though recent developments with regard to the soundness of an investment by an American clothing workers' union in the Soviet clothing industry would appear to justify the Republican Administration's disapproval of economic ventures in Russia.

The importance of this whole problem is accentuated by the rapid growth of the export of the American capital. The United States is now investing more capital overseas than ever before in her history. At the beginning of the century the entire foreign investment of the United States totalled only about half a billion dollars while that of the leading European countries far exceeded this. The greater part of American surplus capital went into the development of American railroads

and her industries. Even at the outbreak of the war the United States was far behind though in the fifteen years from 1899 to 1914 American investments chiefly in Canada, Mexico, Cuba, Latin America and the East had increased five-fold to about three billion dollars. England, however, had put twenty billions into foreign investments, France had about eight billions and Germany five.

To-day the United States has probably between eight and ten billions invested abroad. Probably two billions is in Canada; a billion and a quarter in Mexico; about $600 millions in the sugar industry and railroads in Cuba; in the West Indies and in Central and Latin America there are from $800 millions to $1,250 millions of American capital in mines, railways, oil fields, packing plants, plantations, banking and industries.

Europe has always appealed less to America as an investment field than these other regions and there has likewise been less interest exhibited in her economic and political policies which would have affected investment interests. Most of the American capital, exclusive of municipal and government securities in Europe, has been spent by such pioneer large scale manufacturers as the American Radiator Co., the International Harvester, the Singer Sewing Machine and the United States Shoe Machinery Companies and by the Standard Oil Co. Exclusive of Standard Oil investments and of developments in Rumania and the Caucasus, it has been estimated that there is about half a billion dollars directly invested in industrial enterprises in Europe. Government, municipal and industrial bonds and securities sold to American investors through American banks from January 1, 1919 to September, 1922 have been estimated at $2,613 millions.

These are only the roughest estimates, but they indicate that, together with the war loans amounting to nearly eleven billions, American investors to-day are interested in foreign countries to the extent of over twenty billions of dollars. Since the security and productivity of investments are dependent upon political stability of governments and upon their internal taxation and other economic policies as well as upon their assistance to private interests competing with foreign investors, it is inevitable that the vast increase of American capital abroad has carried with it a need for fuller participation in the international, political and economic developments that have taken place since the war and that are going on rapidly now. On the other hand, this growth of international economic connections carries with it the danger that foreign policy may be too strongly bound up with the questions of financial expediency, to the neglect of interests affecting the welfare of all classes and of the world at large. International peace, for example, concerns more vitally the average citizen than it does those who handle international financing, and there is increasing anxiety among the far-sighted in all countries, and especially in America, that the foreign policies of the nations may be infused with broader considerations than those of purely financial importance. For this reason America is watching the Lausanne Conference with close interest in order that it may be clearly seen whether modern diplomacy is made of dollars or ideals.

Danish Bill for Housing Loans.

A Bill concerning loans for housing purposes has recently been introduced in the Danish Parliament. Under former legislation regarding State housing subsidies, the Treasury was authorized to make direct grants and loans. The present Bill, however, introduces a new principle, as it provides that, as a rule, second mortgage loans may be granted for building purposes. The loans together with previous mortgages must not exceed 85 per cent, or, in exceptional cases, 90 per cent of the cost price of the property in question, and must not themselves amount to more than 40 per cent of the cost price. Loans will be granted to the municipalities, to building associations and to private builders. In the two latter cases, the municipality in question must give security for half of any loss which may be incurred; this provision may be waived under special circumstances. A State Building Fund (Statsboligfond) is to be established from which the above loans will be granted. The necessary funds will be raised by the issue of exchequer bonds (Kasseobligationer) on the security of the State. In certain cases remission of payment of interest may be granted up to 10 per cent of the cost price, as a rule on condition that the municipality makes an equivalent grant to the undertaking. The Bill appoints a Board of nine members to control building prices. The new measure remains in force till 31st December, 1924.

Progress of Engineering, 1922.

By Mark Meredith, M.E.H., M.I.S.A.

Any annual industrial review is not an easy task even under normal conditions. Abnormal circumstances largely complicate the problem. These remarks apply in no limited manner to the engineering of 1922, which cannot be deemed as standing out in any remarkably satisfactory manner above its immediate predecessors. The whole of the industrial situation has been extremely difficult. A period of depression has been experienced, and these adverse conditions are always likely to react on industry for some time. We do not easily and quickly recover a lost industrial prosperity. The previous year had been marked by what was nothing short of a national calamity in a three months' coal stoppage, the results of which are out of the slough of unemployment occasioned by this and other equally unsatisfactory causes.

Indeed the problem of unemployment has throughout the whole year been one of grave concern, forcing itself upon the attentions of both Government and public. True, there had been a steady fall from 16 per cent at the end of 1921 to nearly 12 per cent some eight months later. The unsatisfactory nature of temporary expedients in the payments of unproductive doles kindled activity in putting into operation an unprecedented number of schemes of work which, under other circumstances, might have been longer delayed. Already these efforts are yielding fruit, and without undue optimism it may assuredly be maintained that the whole position is now much more hopeful than for some months past. Work and good-will are still desirable and determining factors. Every day's work well done add to the resources and provides means which will ensure the holding of our own. The recent decision to lay down two capital ships with an expenditure of nearly £10,000,000 in wages has already inspired hope and satisfaction in many industrial areas.

Coal and iron may be said to constitute some index to industrial progress. For some years past we have had to deplore the comparatively low output of coal. During 1922 no such complaint can be made. There has, indeed, been a gratifying maintenance in the output. Very satisfactory, too, has been the exportation, this exceeding by a long way the figures for the previous two years, although still a little short of what may be regarded as the record year of 1913. The value of this coal has been about 22/6 per ton, as compared with 13/8 in 1913, and £4 in 1920. Once again the wages question is of prominence in the mining world, and it is to be hoped that a satisfactory settlement will be effected to avoid any possibility of a reduction of output when the markets abroad are being recaptured.

The output of coal per week during November approximated to 5,430,000 compared with 4,400,000 tons last year.

The outstanding fact in regard to gas has undoubtedly been the outcry against the therm system of charging. We need not discuss the merits of the controversy since a Committee appointed by the Board of Trade to consider and report on the alleged grievances of the consumers is now at work, and, indeed, resumes its sittings on January 1st, 1923. The Press discussion has been marked by the extreme opinions expressed. Reasonable explanations have been offered for moderate increases in consumption and charges when compared with the corresponding period in 1921, when the country was suffering under the limitations in fuel consumption imposed by a three months' coal stoppage. The coincidence of a normal increase in rate with the introduction of the therm system, was, perhaps, unfortunate and it is probable that much dissatisfaction might have been saved had readings been recorded, as is done in some places, in both cubic feet and therms.

It is of interest to record that one large metropolitan gas undertaking, by a careful check of its accounts, showed a very nominal increase in the output of gas in the disputed quarter, and also only a corresponding increase in revenue thereby.

As regards oil and its uses the unusual conditions of the war period have now well passed away, and their position can be viewed more normally. Much oil firing has reverted to coal firing, though the remark does not apply to ocean transport, where conditions very favourable to the use of oil obtained. At the same time, many, if not all, the attempts at boring for oil in Great Britain have ceased. The prospects of success were never too promising, but the attempts would have been

more justified had they been made earlier. Against the decrease in oil-firing, however, is to be set the much more efficient method of extracting power from oil in the internal combustion engine. Rapidly, and no less surely, the oil-engined vessel has to come to the force. First in tank vessels and then for cargo boats, oil engines have now laid hold of passenger vessels, and very large units are being installed in boats intended for passenger service. Whether in respect of these large units or small isolated engines, oil makes a claim for cleanliness, efficiency, and ease of transport which will for a long time to come ensure a steadily increasing demand. Will this demand be met?

The uncertainty of the world's oil supplies, has, generally speaking, never been lost sight of, and this has incited inventors to the indication of new sources. Very recently Professor Sabatier of Toulouse has utilized vegetable products in the synthetic preparation of oils of the petroleum type. The processes involved, *viz.*, dehydration and dehydrogenizing are effected at 600° C., and are supposed to follow exactly the lines of oil formation from vegetable matter in the earth. At the same time it cannot be suggested that there is any contraction in the world's output of oil. This increases year by year. The likely trouble is the increase in consumption which needs checking by restricting the use of oil to those applications which give the most efficient return.

It is of interest to record that legislation is proposed to deal with the nuisance created by the ejection of oil residues from the tanks of vessels, and that orders have already been placed for two vessels which will receive such residues and treat them by a process of filtration.

The demand for electrical power ever increases, and new stations are being created and other extended to such an extent as to leave little room for doubt as to the convenience and cheapness of this form of easily transmittable energy. While the super-power station scheme has not been, and never may be, realized on the lines originally proposed, still, new large stations are coming into existence for both large and small industrial areas. These comprise the latest and most efficient types of plant, and particular care is being exercised to bring up the efficiency of every stage in the process of conversion of the latent energy of fuel into the electrical form. Large boilers reaching a capacity of 100,000 lbs. of steam per hour have been installed, though it is thought probable that for general use those of 50,000 lbs. will prove the more enduring type. High pressures and superheat are the order of the day, and where the industries create the demand for low pressure steam for general heating and process work, very economical use of the steam is made possible by the application of the bleeder turbine in which high pressure steam expands through the blades to low pressure, and then is available partly for drawing off for external heating purposes, and partly for the low pressure condensing turbine. Such turbines are now being available in comparatively small units. More attention too, is being given to the raising of power from the lower and cheaper grades of fuel. This constitutes an important step, as the fuel costs bulk largely in the cost of the unit of power. Engineers who have devoted themselves to this end of the process should reap a rich reward in cheapening power, and at the same time utilizing fuels for which no other purpose seems at present forthcoming.

Several large stations came into operation towards the close of 1921. These were referred to about a year ago. Quite recently an extension to the power supply of Walsall has been made, and is considered to defer indefinitely any proposal to build a super-power station in the vicinity. In 1913, Walsall possessed an obsolete station of only 2,500 k.w., with a coal consumption of 13 lbs. per unit. To-day the capacity is 13,000 k.w., with a coal consumption of less than 2½ lbs. per unit. One of the difficulties of large stations is that of adequate cooling water, but at Walsall this has been got over by an arrangement with the canal company to use a stretch of three and a half miles of canal as a cooling pond. As against a coal consumption of forty-five tons per day, no less than 45,000 tons of water are required daily. The decreasing costs of plant are exercising no influence towards extensions. This now approximates to £13 per kilowatt against as much as £40 or more during the past two or three years.

Some idea of electrical plant developments may be gathered from the large sums which have been sanctioned by the Electricity Commissioners, so that notwithstanding slow progress at first there is abundant evidence of rapid reorganization of electrical supply in this country, and the report of the Electricity Commissions on the unification of the supply of Greater London is due at an early date.

On our railways it is happily the fact that no great catastrophes have occurred involving serious loss of life. True, there have been some close shaves. Breaking connecting ros were responsible for minor accidents, in three of which fatalities occurred. Electrification has been the keynote of suburban developments. Amongst the completed schemes is that of London and North-Western between Chalk Farm and Bushey, Herts in July, realizing a scheme which had necessarily been delayed during the war.

Extensions of the electrification of the London and Brighton line as far as Selhurst are now in hand, and interest attached to the provision of the electrical equipment from home factories instead of, as was formerly the case, mainly from abroad.

Large electrification orders are now coming from abroad. India, South Africa, New Zealand and Japan are important contributors. These orders run into large sums of money and must go a long way towards bringing the electrical world to a level of industry which exceeds that of engineering in general. In fact, there can be no cause for complaint in the volume of work now coming into our huge electrical factories. This work will give employment to large numbers of men, and in utilizing more fully productive capacity, which has been prepared, but never fully occupied, will pave the way towards the maintenance of the British electrical industry in face of the world's competition.

Meanwhile our main lines operating on steam are resuming their pre-war and long-distance running, and in April last a new locomotive, the largest and most powerful in use in the British Isles, was introduced into the Great Northern service. Its haulage capacity is a load of 600 tons at a speed of fifty-five miles per hour. The engine and tender weigh 151 tons and carry 8 tons of coal and 5,000.

At the present time the public will be interested in the schemes of railway amalgamation which came into operation on January 1st, 1923, and appreciate the reduction of fares simultaneously introduced.

Amongst the many details of engineering progress reference may be made to the increased use of films as a means of displaying the operation involved in productive work. It is all to the good for the workers to have a general idea of the sequence of operations, of only one of which they may have special knowledge. Amongst the films which have been shown during the year are those descriptive of the breaking down of ammunition in France and the application of the oxycatylene flame in engineering work. This blow-pipe has now to be looked upon as a tool of considerable importance. The application of both this and the electric arc for manufacturing and repair purposes has introduced quite new and somewhat revolutionary changes in workshop practice, effecting considerable economies over the older methods which they replaced.

Again every year brings new uses for different materials. As an example, steel is rapidly becoming a material which, combining lightness and strength, find application for furniture, such as tables, cupboards, lockers, shelves and the like.

Another important factor in the economies of production is the extended application of the methods of standardization on a scale never conceived in pre-war days. Thus again has necessity proved the mother of invention, and thus, too, are revolutionary changes in workshop procedure brought about. From another point of view we are getting further away from the war. The vast stores of surplus war materials have almost been completely disposed of. Hundreds of thousands of tons of metals have been brought back and pressed into the service of peace. Attention is now being turned to industries which during the war period either revealed this inadequacy or were almost completely dislocated by war requirements. On the ruins of war there is ample room for the creation of new avenues of industrial work, towards the success of which the methods of war may still render signal service. Of the schemes which are still held in abeyance, that of the Channel Tunnel is still urged, though it has come to be realized that if the British Government gave its sanction the cost would have to be privately borne and confidence is expressed in this possibility.

Canadian cement manufacturers are making a bold bid to capture the trade of Jamaica. Lively competition between the Canadian product and English made cement has proceeding. Importations from Canada during the first seven months of this year equalled those from the United Kingdom. This is the result of a visit to Kingston early in the year of a representative of the Canada Cement Company, who formed part of the delegation from the Canadian Manufacturers' Association which toured the West Indies at the time.

Co-operation in the U. P.

Agricultural conditions were favourable in most parts of the province during the year under review, and this contributed materially to punctuality in the repayment of loans and to reduction in the incidence of indebtedness. The total number of working societies and the amount of capital involved in the movement increased considerably, and progress would have been even more marked, if a policy of special caution and watchfulness had not been adopted. Consolidation was placed before mere expansion, and only banks of which the position was beyond question satisfactory were allowed to organize new societies. The wisdom of this policy cannot be gainsaid.

The net increase in the course of the year in the number of societies was 645, in total membership 18,208, and in aggregate of working capital Rs. 14,70,814. These figures are satisfactory, and so also are the increase of Rs. 8,89,609 in the total of the capital involved in the movement and the decrease from 37 per cent to 31.2 per cent in the proportion of arrears to outstandings in the case of Central Societies. There was a slight fall in the proportion which the total reserve funds of the movement bear to its total outside liabilities, but the present proportion of 38.9 per cent is in itself sufficient.

The bulk of the increase in the number of societies was as usual, in respect of agricultural societies, 728 of which were registered during the year as against 93 dissolved. It is a little disappointing to find that the number of non-credit primary agricultural societies did not increase, but one cattle insurance society was registered. The foundation of cattle insurance societies has so long been recognized as desirable that it is to be hoped that the society which has now been established will be successful.

Some progress was achieved in the sphere of non-agricultural co-operation, in respect of which there is, as has often been pointed out, the greatest backwardness. Societies of this type increased by 7 to 199 and the position of such societies as to number of members, amount of working capital, advances, repayments, arrears, and profits improved considerably. Non-credit societies of this type increased by 4. Housing societies are reported to be experiencing difficulties; the obstacles, principally financial, in the path of this kind of society are admittedly severe, but with the assistance which local bodies may be counted upon to give to such societies, their difficulties should be capable of solution. The housing problem in some of the large towns at least is so acute that the success of such societies is a matter of no little importance and Government are watching their progress with interest.

Last year's rise in the number of societies consisting exclusively of members of the depressed classes was continued, 36 new societies with a membership drawn from these classes being enrolled. The Christian and the Arya banks are doing commendable work in devoting special attention to societies of this class.

The Co-operative Exhibition held at Allahabad in the winter of the year was a distinct success and reflected great credit on all who were concerned in its initiation, organization, and management.

To sum up, while there is still of course much to be done for the advancement of co-operation in these provinces, the year was one of unostentatious but useful work, which certainly placed the movement in a stronger position than it held at the beginning of the year. For this the thanks of the Government are due to the gentlemen, non-official as well as official, who lent their aid. The Governor, acting with his Ministers, has noted with peculiar satisfaction the Registrar's remark that the number of honorary workers has greatly increased, and that Directors who used to take only a nominal or indifferent interest are now displaying real solicitude for the welfare of the banks under their charge. There is still however scope for many more honorary workers in the cause of co-operation, and it is hoped that persons ready to undertake useful social service of this kind will come forward in increasing numbers in the present year.

General Nawabzada Obaidulla Khan, C.S.I., of Bhopal has announced in the "Bhopal Gazette" his intention of furthering the progress of education among the subjects of Bhopal State. To this object he has contributed the sum of Rupees four lakhs in securities, from the interest of which amounting to approximately twenty-eight thousand and five hundred rupees scholarships will be awarded to deserving students for religious, general and high education during the donor's life-time and in perpetuity.

The Future of the League of Nations.

The League of Nations is in its infancy. So much of that short span of life which it has so far enjoyed has been devoted to the setting up of machinery, to the putting together the wheels of the engine and attending to their lubrication, that he would be a bold man who would venture any very definite prophecy for the future. There is little to guide us in the history of the past, for though the idea is not a new one, it has hitherto either remained a theory unrealized even by experimental practice or it has foundered upon the rock of some international difficulty. But if the idea is not a new one the present circumstances of its presentation are unprecedented. The Holy Alliance speedily degenerated into a League of monarchs rather than of nations and its horizon was bounded by the confines of Europe. No one had enunciated the doctrine of self-determination with its lofty idealism of equality and justice for all, with its exaltation of the principle of nationality and with all the perils and limitations inherent in its practical application. Consequently the extra-European possessions were regarded as mere appanages of the Mother Country, hardly perhaps so much as even that but rather as the property of the monarch. The conceptions of nationality, of the rights of backward races, of the spirit of democracy—the fundamental ideas upon which the present League is based—are new to the world, at any rate in the sense that they were not before the minds of those who promoted or of those who upheld the Holy Alliance of 1815.

The League is therefore as it were writing upon a clean slate. It must face squarely the difficulties that lie before it, and they are neither few nor negligible. To revert to our image, it must correct the wheels that creak by modifying them or by oiling them, it must replace those that hinder the smooth working of the machine or threaten to stop it or if that be not possible it must even consent to sacrifice those parts which threaten to paralyse the whole. And as in whatever scientific invention you will—motor cars, railway engines, gramophones or battleships—we are constantly proceeding towards perfection by successive steps, so the League must expect to advance, to correct its errors by the light of experience and to adjust its practice to its theory.

One of the first of these practical difficulties is to decide what constitutes a domestic question. It is sometimes thought that such a matter as this can easily be settled according to the circumstances of each case but experience shows that owing to the interplay of States what seems at first sight domestic may prove to involve international interests. Thus in 1820 Austria was at great pains to show that her differences with Naples were an international matter but England could not agree. And later when the South American Colonies revolted against Spain, England's refusal to regard the affair as an international question led indirectly to the break-up of the Continental League.*

It is easy to see that the line drawn between foreign and domestic questions must be vague and ill-defined; the Indian Reforms themselves are a proof of this, for while the constitution of India is essentially a matter between herself and England, an ingenious advocate might argue with some plausibility that the grant of self-government to India would entirely alter the political adjustment in Asia and change the whole outlook of England's foreign policy. It is not probable that such a question would ever arise; it is an extreme example of the manner in which a purely domestic matter might be dressed up into the likeness of an international question.

It has been remarked in an earlier paper of this series that the question of Disarmament depends upon the completion of the League by the admission of the important States who are not yet members. For Nationalism and Internationalism cannot be entirely reconciled since with the former are bound up the whole political fabric and the peculiar institutions of the State. And so long as these continue National Defence must always be the first pre-occupation of the people nor can any nation afford to disregard the possibility of aggression by some other which has bound itself by no covenant. The Washington Conference has however shown that the spirit of the League also animates other nations than the Member States and that the world is conscious of the heavy burden of competitive armaments with their incentive to an appeal to arms rather than to arbitration for the settlement of a quarrel.

* England was never an official member of the Holy Alliance.

Next to disarmament the most thorny problem that confronts the League is the Economic Blockade. Theoretically it is the most effective weapon in the whole armoury for enforcing peace upon an aggressive State. By common consent the whole world is to sever all commercial relations with it, to refuse to sell to it or to buy from it and it is anticipated that the financial and economic straits to which such a State would be reduced to say nothing of the moral effect of being branded as an outcaste among the nations, would be so terrible that the mere threat of it would be sufficient. The plight of such a nation is comparable to that of the excommunicated Indian, denied fire and water and the decent accompaniments of life and degraded in the estimation of his fellows. But nations cannot always be treated like individuals ; there is always danger when you begin to meddle with the delicate structure of economic relations. No two nations are exactly alike in their commercial relations to one another and it may well happen that by inflicting the economic boycott upon a nation in a quarrel which is only hers by reason of the Covenant of the League, a State may injure herself far more than the would-be aggressor. It was in deference to the wishes and fears of certain States on this point that the Council has now been empowered by an amendment to the conditions of the covenant to postpone the Economic Blockade in the case of any particular State, thereby releasing it temporarily from its obligation. The Economic Blockade Commission has moreover addressed itself particularly to various questions arising out of Article 16, such as the conditions justifying its application, the methods of application and the authority who should decide upon its necessity.

Many people have been deterred by difficulties such as these from lending their support to the League. How, they say, can the League ever succeed so long as these questions remain unsettled ? And yet what solution is possible ? Others are perhaps satisfied with the ideal ; they crave for a stable peace but refuse to face the practical difficulties. Nothing is gained by either attitude. It is mere faint-heartedness which would give up the attempt because there are obstacles in the way of the immediate realization of their hopes. It is in the highest degree unpractical to shut the eyes to the difficulties and it is the certain way to court failure. No one knows better than India that the solution of large and intricate problems is not the work of a day, for India has seen how deep-rooted are prejudice and custom even when the thing attacked is admittedly an abuse. No one knows better than India that movement begun in enthusiasm die of mere weariness when ways and means are not considered and the efforts are barren of results. The only sure road to success is to hold tenaciously to the course towards the goal and to face boldly the obstacles in the way, recognizing that they exist but resolute in the determination to overcome them.

Meanwhile the League is not idle. Enquiries continue into such questions as the private manufacture of arms and into the general scheme for the reduction of armaments. The question of the Economic Blockade has been examined so far as is possible without the aid of experience, and the new principle of the rights of backward races has been acknowledged and is in actual force. It may take years before these labours come to harvest but meanwhile the League is justifying itself in other ways. Machinery has been set up for carrying out the intentions of Article 23 of the Covenant relating to the conditions of labour, the humane treatment of women and children and the traffic in opium and much work has been done in these directions. The General Conference of Labour is a collateral body, not subordinate either to the Council or to the Assembly, though the latter body controls financially the International Labour Office ; it is organized on social rather than on national lines in that the Governments, the employers and the employed are all represented upon it and that it has no power to enforce its decrees. But the agreement of the delegates of all three bodies cannot but have a weighty influence with the Governments concerned. Thus the Conference of 1921 addressed itself to the questions of unemployment, of the hours of labour and of the work of women and children, and the resolutions at which it arrived have either been adopted or will be given the most careful consideration. The mere fact that these representatives of many nations are thus able to meet and to exchange views is a happy augury for the future.

But the League of Nations depends for its future mainly upon two things. It cannot last unless it is supported by public opinion, for the will of the peoples towards peace and brotherly understanding is as the breath of its nostrils. And in this support the nations

must co-operate; the League looks to India as well as to England, to China as well as to France. Public opinion will fade into indifference and die unless all the peoples have faith in the future and the vision which can see beyond the immediate present. And again and closely connected with this faith of the peoples is the attitude of the various States. The dignity of the League must be upheld; it must be treated, not indeed as a kind of superior State, but as the expression of the combined opinion of the world commanding the deference of any single nation. We do not want to see the League turned into a machine for disentangling knots that have baffled others; we do not want to see it made the servant of any Conference of States however powerful; we do not want to see it, in the homely words of the fable, used as the cat to pull the chestnuts from the fire. For the League stands for a lofty ideal, perhaps the loftiest yet conceived since nationality took shape. Its future is assured when once it is recognized that in it is contained the Court of appeal to the world's opinion; let us have faith in our own ideals and in the eventual realization of them and in the fulness of time with the help of God, by whatever name He be worshipped, we shall reach the goal of universal peace and universal goodwill.

India's Post.

The opinion has been expressed by Mr. G. R. Clarke, Director-General of Posts and Telegraphs, in an interview with the press, that there is very little probability of India ever returning to the half anna postage for letters and the quarter anna for post cards. Mr. Clarke also said that after the last increase of the postage rate there was an abrupt drop of between 26 and 30 per cent in the volume of business done by the Post Office. Since July, however, the amount of matter going through the post had steadily increased, so that the additional revenue now coming is amounted to between 1½ and 2 lakhs per week. "However, the total takings of the Posts and Telegraphs Department are not up to expectations." Mr. Clarke commented, "firstly, owing to the very slack state of trade and business generally in the country —of which the Post Office is a more or less accurate barometer—and, secondly, because of the decrease in telegrams which also entirely depended upon the state of trade. Telegraph trade declined roughly by about ten per cent, but we are now returning to normal conditions. I don't think that we can go back to the half-anna letter and quarter-anna post card in this country. One must consider that in England they have never been able to go below the one penny letter and the half-penny post card, and in England the average distances for postal carriage are something like one-sixth of what they are in this country. The Post Office in this country, therefore, has to bear a considerably larger expenditure than it has in England. This larger expenditure is chiefly due to the very great increase in the cost of labour and services, such as motor services, railway services, etc. I think the intelligent public will realize that we cannot possibly undertake to carry any article from one end of India to the other for a quarter of an anna. It simply does not pay us, and, in our case, the more we carry the bigger our loss. Articles like post cards, which have to be cleared from letter-boxes and carried long distances by road and rail for delivery to addressees, cost to the Post Office considerably more than a quarter-anna postage can cover." Another thing that the interview revealed is that important developments are also taking place in the Telephone Department. Mr. Clarke said that when new repeaters were received from England it was hoped to get first-class connections for conversation between Delhi and Bombay, Delhi and Peshawar, and Calcutta and Bombay. It was, of course, possible even at present to speak between Calcutta and Nagpur, and between Nagpur and Bombay, the tests having proved satisfactory. These lines, however, were not yet open to the public.

The Italian Institute for Commercial Expansion is undertaking the expense of sending samples of Italian goods to the Italian Chambers of Commerce in North and South America. The Italian steamship lines to South America have agreed to transport these samples free of charge, and the Chambers of Commerce will conduct a vigorous campaign in favour of Italian merchandise.

Railways in South India.

The Madras G. O No. 79, Ry., 13th November 1922, of the Public Works Department contains a review on the Railways in the Madras Presidency. The report gives us particulars of the personnel of the Railway Board, mileage, construction of new lines, surveys, projects under consideration and their progress at the end of the year and important works completed or under execution during the year. On the whole, the progress report of the 46 projects under consideration during the year is not a happy reading. Most of them have been postponed or deferred for one reason or other. Want of funds, abnormal conditions created by war, and an unfavourable money market are some of the causes for dropping most of the schemes. The Mayavaram-Tranquebar project was the only line, which was sanctioned by the Railway Board and whose work was actually begun at the close of the year.

We take the following extracts from the review :—

"MANGALORE-PANIMANGALORE.—This is an off-shoot of the larger scheme, *viz.*, the Hassan-Mangalore Railway started by the Mysore Darbar; the larger scheme is in abeyance pending an investigation of the prospects of the connection with a suitable port on the west coast. The financial prospects of the scheme as a branch line were found to be very poor and the project report was recorded as desired by the District Board pending a decision regarding the larger questions.

ERODE-NANJANGUD WITH A BRANCH FROM KOTTAMANGALAM TO METTUPALIAM.—

The Coimbatore District Board proposes to take up the British section of the line—Erode to Satyamangalam. The prospects of the whole line were under investigation by the Special Engineer deputed in connection with the Mysore West Coast Railway Survey. The Mysore Darbar requested permission to construct and own the whole line but the Railway Board allowed the Darbar to begin the construction of the line from Nanjangud southwards within their territory up to Hardanahalli and were prepared to consider the revised application of the Coimbatore District Board for concession for the construction of the Erode-Satyamangalam section. In connection with this matter, among District Board lines, we read as follows :—

ERODE-SATYAMANGALAM.—A revised estimate for a low grade line was accepted by the District Board and terms for construction and working settled with the South Indian Railway Company. The Board has submitted proposals for constructing the line. This was under consideration.

HASSAN TO MANGALORE.—The line will traverse both British and Mysore territories and was surveyed as part of the Arsikere-Hassan-Mangalore Railway Projects once in 1894-95 and again in 1899-1901. Progress was not made for some time owing to a lack of enthusiasm on the part of the Mysore Darbar and the District Board of South Canara. In 1913 the Mysore Darbar refused to spend money on the Railway unless Mangalore was made an all-season port. In view of the proposed Bhatkal Harbour scheme, which is under the consideration of the Government of India, it remains to be seen whether the Mysore Darbar will spend money on this line or on some railway leading to Bhatkal or to some other port north of Mangalore.

MANGALORE-UDIPI EXTENSION.—The traffic prospects were investigated by the Collector and his report was submitted in May 1918, but the consideration of the question was deferred until the possibility of developing a harbour at Malpe and other west coast ports was decided.

EXTENSION OF HOSPET-KOTTUR LINE TO HARIHAR.—A report of the survey of the line was received and in view of the meagre prospects offered, it was decided not to move further.

The report contains also an account of the works completed or under execution during the year in regard to bridge work, permanent way, stations, additions to buildings and locomotive workshops.

Italian shops for building railway materials have now an annual output capacity of 600 locomotives, 1,200 passenger and 15,000 freight cars, besides subsidiary products. This is much in excess of normal home needs, and German competition hinders exports. Until recently the shops were working full time supplying the needs of the State railways, but their situation is now growing difficult.

Industrial Notes from the United States.

By Alfred T. Marks.

ANOTHER 100,000 H. P. FROM NIAGARA FALLS.

WASHINGTON, D.C., U.S.A., DECEMBER 30, 1922.—Another 100,000 horse-power from Niagara Falls, New York State, has been harnessed. Think of a straining, tugging line of horses extending from New York City to Philadelphia and you will have a fair idea of the amount of power furnished by each of the immense electric generators which have just been installed in a large lower plant at Niagara. There are four of these generators and each of the spinning giants produces 37,500 horse-power.

As is well known, water-power is generated by permitting a great volume of water to fall from a high level to a lower level. In this case the upper level is the Upper Niagara River. The difference in height at the point where the water is allowed to drop through the gigantic "penstocks," or pipes, is somewhat over 220 feet. A power canal runs around the falls and brings the water to the mouths of the large penstocks at the brink of the falls. A solid column of water sixteen feet in diameter dashes down the penstocks at a speed of about four miles a minute.

At the end of the great steel penstocks tons and tons of water spend their force against the waiting blades of a gigantic turbine wheel. This turbine wheel revolves in a horizontal plane, and connected with the upper end of its shaft is the revolving member of the big electric generator that converts the kinetic energy into electric energy.

The water rushing into the penstock is caused to whirl around at a terrific pace. It rushes out at the centre and there passes into the river. A huge valve is located at the bottom of the penstock, and the water passes this just before it is dashed into the turbine. This valve is hydraulically operated and electrically controlled. The big valve, weighing several tons, is moved forward merely by closing a switch, when it immediately cuts off the flow of water in the penstock.

The plant is said to be one of the most expensive, of its kind, in the world.

"AUTO-BUNGALOW," THE LATEST ADDITION TO THE MOTOR FAMILY.

A motor-building concern in one of the mid-western states has just placed on the market the "auto-bungalow." This vehicle which promises to attain great popularity, is the culmination of a movement which has been growing ever since the motor car became a reliable means of transportation. Its ancestor was the two-wheeled home-made camp trailer, designed to carry the tents, bedding, and other requisites of a several-weeks period of "roughing it" in the woods or at seashore. Little did the builders of these makeshift contrivances realize that they were obeying a desire which has finally found practical expression in travelling homes equipped with conveniences not found in many rural and small town homes. That this assertion is not exaggerated an inspection of one of these automotive apartments will prove, as it proved to the writer a few days ago near Washington.

The complete cost of the vehicle was $15,000, of which over $9,000 was expended on the body and appointments.

A standard motor-truck chassis, fitted with pneumatic tires, forms the foundation, if such it may be called. The body, built to the owner's specifications, is a splendid example of the coach-builder's art—spacious, substantial, weather-proof. An all-over length of 30 feet necessitates an abnormally-long overhang in the rear which, although presenting an odd appearance, is a positive advantage, as it balances most of the weight over the rear axle, thus relieving the front wheels and making the steering much easier.

The living quarters occupy the whole of the interior, including the space usually taken up by the front seat. This gives a clear space of approximately 8 by 20 feet, which is ample to accommodate a kitchenette, combination couches and folding beds, easy chairs, a folding dining table, and other necessary furnishings. The floor level is well above the tops of the rear wheels, which affords a surprising amount of space under the body edges for the stowage of steamer trunks, suit cases and miscellaneous luggage. Sleeping accommodations are provided by three folding cots, which are made up on the rear observation platform, and by combination couches that extend lengthwise on each side of the compartment.

The kitchenette is equipped with a gas stove, fireless cooker, refrigerator and hot water tank. Toilet facilities have not been overlooked, being amply supplied by a stationary wash-bowl with hot and cold running

water, and a shower-bath. A special storage battery and generator installation supplies power to operate 22 incandescent lights of small size but great brilliance.

The owner, with his family and two guests, are making a tour of the United States in this auto-bungalow, which, according to the plans, will require close to three years.

That comparatively few are able to finance the construction of such wheeled palaces need be no bar to their partaking of the joys of the open road on a more economical scale, as is witnessed by the literal swarms of self-sufficient tourists which frequent the highways throughout the length and breadth of the land. Thousands of the fraternity are quite independent of hotels, and eat, sleep, and live aboard their travelling homes. One of the most interesting of these outfits was built by a resident of the State of Kansas at a very low cost. It consists of a body modelled on the lines of the old-time "prairie schooner." The chassis of a Ford touring car, upon which it was mounted, was lengthened several inches to increase the wheel-base and improve the riding qualities. Six persons enjoyed a trip to the Pacific coast in the inexpensive vehicle at a fraction of the cost that would have been the case had they travelled by rail.

An even simpler equipment was that assembled by a resident of one of the New England States. This was simply an open, canopy-top, light delivery car, fitted with comfortably-cushioned broad benches, which were used as beds by the younger members of the family of six. The others slept on folding cots under a quickly-erected "half tent" one side of which was attached to the side of the canopy top and the other to tent-pegs. Meals were prepared over camp fires or on an oil stove, depending upon the weather, and eaten from papier-mache dishes.

It is predicted that the next five years will see very remarkable innovations in the evolutions of the travelling home, several largely-capitalized concerns having completed all plans to enter extensively into the manufacture of the auto-bungalow in many designs and kinds.

Stereopticon Changes Pictures Automatically.

An interesting patent just issued here is for a stereopticon which changes its pictures in an automatic way. The new stereopticon has been modernized in the form of an automatic machine that takes the projected picture out of the dark room and permits its use for displays in show rooms or windows as well as for entertainments, etc.

The perfected machine, which gives promise of winning much popularity, will show any number of lantern slides up to fifty in continuous and rapid rotation in daylight or night. The pictures change every seven to thirty seconds, either automatically or by the pressure of a button.

The newly-designed machine is made with two sizes of screens, respectively sixteen by fifteen inches and twenty by twenty inches, and may be operated from an ordinary lighting circuit at a cost of about four cents per hour.

The new machine has retained its familiar box-like form, with the closed sides, back, top and bottom, and with a screen in front at the top. The development has taken place in the mechanism inside for automatically picking up each slide in turn and elevating it so that its image may be thrown on a mirror at the back of the box and then reflected to the front screen seen by the observer.

The slides are held in order of their use on a slanting frame-work and picked up by a hinged mechanical finger device. One-thirtieth horse-power operates the slide-selecting finger apparatus and a condensing system for daylight projection. The entire mechanism is simple and its operation practically perfect.

Huge Mower Cuts and Stacks Grain in One Operation.

Stacking the grain at the same time it is cut is the work performed by newly-devised harvesting outfit now being introduced to American farmers and gaining extensive use in the Western States.

The ingeniously-contrived machine avoids the necessity of driving a heavy wagon about the field, loading from shocks and later making the long haul, to deposit its load at the stack. The novel and unique part of the outfit is a 12 by 24 feet platform, with a high, slat-sided rack, mounted on wheels and hitched to the rear of a tractor. Two headers, also drawn by the tractor through a side hitch, cuts the heads and a short length of the stalks from the grain, after which it is carried to the rack by the conveyors. Three men tramp the load continuously, packing it tightly, and especially in the centre. When the rack is filled a rope is passed around the load and fastened to a stake driven into the ground. Upon the tractor resuming its journey the well-packed grain is unloaded, and the erstwhile load of straw becomes a stack of wheat, oats, timothy, or rye, as the case may be,

Gear Changes made Noiseless.

To do away with the very objectionable noise so often made in gear changing on automobiles, an instrument has been devised that shows the driver when the rate of rotation of the gears is suitable for throwing them into mesh noiselessly and without any danger of damaging them. Several of the larger manufacturers of automobiles are incorporating the new device in their machines.

The instrument is in the form of a dial graduated to revolutions per minute and miles per hour, on which are three marked pointers, one being longer than the others, and these represent the three gear ratios. Below these graduations is a standard speedometer. The revolution indicator is driven by the shaft between the clutch and the gear box. To engage noiselessly in any gear ratio the driver increases or reduces the revolutions of this shaft, with the clutch or accelerator, until the long pointer and the pointer of the gear he wishes to use coincide.

To Warn Motorist of Overheated Engine.

Another device which will prove of great assistance and popularity to motorists has been given patent protection. This is a new accessory just placed on the market which detects rising automobile engine temperatures. The active element of the device, a thermostatic switch, is attached directly to the engine block and presses tightly against the iron. Being in intimate contact with the heat source this member will act quite independently of the temperatures of the radiator or the cooling water. The signal proper is an upright fitting, which may be mounted on the radiator cap or on one of the front fenders. Two small light bulbs, one red and one green, contained in the signal member, are wired to the electric system of the car, by way of the thermostatic switch, in such manner that, at normal engine temperatures, the green light burns continuously. If for any reason, such as low water, a broken fan belt, insufficient oil, etc., the engine begins to overheat, the thermostat will expand, and thus turn the green light off and the red danger signal on.

Preventing Leaks in Concrete Tanks.

An expert in the use of cement for tanks, reservoirs, etc., makes the announcement that leaks in concrete tanks, silos, cisterns, etc., designed to contain water or other liquids, frequently result from the neglect of properly joining the pourings of successive days. When work is stopped for the day, he says, the surface of the concrete in the forms should be left rough so that the concrete poured on the following day will properly bond with the old mixture. The surface should be well washed and painted with a cement-grout paint, mixed to the consistency of cream and applied immediately before placing new concrete in the forms.

Some builders, it is further stated, when discontinuing work on tanks, silos, troughs, reservoirs, etc., embed a six or eight-inch strip of tin, or tin stovepipe iron, into the soft concrete, leaving half of it projecting so as to bond in the concrete to be deposited or placed the next day, also following this by painting the entire surface with a cement-grout paint. This method has been found by many builders very effective in preventing the construction joints from opening up.

Potatoes Picked, Cleaned and Sacked as Dug.

A very simple machine has been developed for picking, cleaning and sacking potatoes in one operation. It can be attached to the rear of any standard chain digger, from which the potatoes are received upon a cleaning apron as fast as they are dug. This apron revolves in an upward direction, carrying the vines and weeds over the top, while the potatoes are rolled to the sides into elevators by means of worms. The elevators carry them to a second apron, where they roll to the centre and into the sacks.

Dr. Horak, of Prague, claims to have discovered a process for making unbreakable glass. He was forestalled in this invention 2,000 years ago, but the secret formula perished with its inventor, declares a writer in a London paper. Dion Cassius relates in his Roman history how a man presented himself before the Emperor Tiberius with an unbreakable glass drinking vessel he had made. He dashed it to the ground and otherwise ill-treated it, with no result except a dent here and there, which he remedied with a few blows from a hammer. Tiberius however, saw not the marvel of the glass, but the probability of its adverse effect upon the price of gold and silver. "Does any one else know your secret method of making unbreakable glass ? " he demanded. "No," replied the inventor. Whereupon the Emperor had him executed with neatness and despatch.

Canadian Trade and Finance.

MONTREAL, JANUARY 1st, 1923.—A survey of economic conditions throughout the world during the year which has just drawn to a close, inspires more confidence than such a review would have warranted twelve months ago. At the same time, there are still retrograde influences at work, particularly in Europe, which act as insuperable barriers to the return of prosperity.

Canada is undoubtedly among those countries for whom the year 1922 has been one of progress. Despite certain disappointing features attendant upon the completion of the process of deflation, early in the year, a definite turn has been made, and the past few months have been characterized by trade expansion and internal development. According to present estimates, the Western grain crop is probably the largest on record. The wheat yield is only slightly smaller than the record crop of 1915, and is practically 30 per cent greater than that of last year. An exceptionally high standard of quality has been maintained over 90 per cent of all wheat grading No. 1, 2, 3 Northern or contract grades, and almost 70 per cent of the total grading either No. 1 Northern or No. 1 Hard. The prices of wheat, however, have been considerably lower than was the case during 1921, the average cash price of No. 1 Northern in storage at Fort William during the last quarter of 1921 being $1.22, as against an average of slightly more than $1.00 for the same period of 1922. Fortunately for the farmer, the decline in prices has been partially offset by the decrease which took place in freight rates and in operating costs. In total exports of wheat, Canada has assumed a leading position. A recent report published by the International Institute of Agriculture places the exportable surplus of the leading wheat growing countries in the following order : Canada 312 millions bu., United States 305 millions ; British India 37 millions ; Australia 33 millions ; Argentina 20 millions. Recent returns indicate that Canada's exportable surplus will be considerably in excess of the figure quoted.

In industrial conditions a decided improvement has taken place. At the end of 1921 a large number of manufacturing plants were inactive, and many were operating with reduced staffs. This situation has changed completely. The increase in the demand for manufactured goods, and the improvement in the price of such goods has led to the full time operation of plants, particularly those producing textiles, automobiles, pulp and paper, and iron and steel. This increased activity has exhausted the high priced stocks of raw materials which had accumulated, and which retarded a decline in costs. The year was one of unusual activity also in the building trades.

UNITED STATES.

Among the chief factors which have entered into the improvement in confidence which is general throughout the United States, are increased industrial production, general trade improvement, and more stable labour conditions. If, as seems likely, the slight upward tendency of prices which has taken place recently, is indicative of the completion of the adjustment process, rather than what is called secondary inflation, which results from relatively cheap and plentiful money, this too is a favourable sign. The iron and steel industries are operating at about 80 per cent of capacity, while textiles have been stimulated by the strong position of raw materials, and report more activity than they have experienced for more than two years. The increased demand is, in no small part, due to the inactivity which was occasioned by recent strikes. In general, the labour troubles have practically subsided.

GREAT BRITAIN.

On account of the complexity of economic conditions in the United Kingdom a comprehensive analysis of the situation is not easy. The position of Britain with regard to industrial and commercial recovery appears to be somewhere between that of the United States and of the continental countries. Improvement from the acute depression of 1921 is very marked in some lines, while in others it is difficult to detect definite indications of progress. Coal mining, which is one of the great basic industries of the country, shows a distinct recovery. The foreign demand for coal has steadily increased and exports are approaching the pre-war figure ; the total for the first ten months of 1922 was 54 million tons in comparison with 63 million tons for the corresponding period of 1913. One of the favourable features at present is the progress which has been made in foreign trade. For the first ten months of the year imports declined by £99 millions, while the value of exports increased by £13 millions, despite the reduction in prices.

While a superficial analysis of general conditions in Great Britain might disclose only the favourable aspects, there is, under the surface, a darker side. Although a reduction of one shilling per pound has been made in the income-tax, the country is struggling under a burden of taxation which is unprecedented in British history and which, in per capita taxation, far outclasses the burden carried by any other country. Britain, in brief, is definitely facing the issue rather than postponing its adjustment. One circumstance, attendant upon such a policy is the widespread unemployment from which the country is, at present, suffering. During the year, there was a substantial decline in the value of money on the London market. The Bank of England discount rate dropped from 5 per cent at the beginning of the year, to 3 per cent, and the bill market rate has fallen from 3½ to 2½ per cent. In the field of public finance, Great Britain is the only European nation, among the belligerents, which has been able to balance its national budget. The fact that the national debt has since 1919 been reduced by an amount equivalent to almost half of the entire pre-war debt, is eloquent testimony of the country's fundamental strength.

EUROPE.

While conditions in France are far from normal, the progress made during 1922 was in the right direction and basic conditions are fundamentally better to-day than was the case at the close of 1921. The outlook is brightened by the fact that the Government has made a reduction in military expenditures from 18,000 million francs in 1919 to less than 5000 million francs last year and slightly more than 4,000 million francs is provided for this purpose in the 1923 budget. While no special effort is being made to reduce the note circulation of the Bank of France, in view of the risk which such a policy would involve to business and industry, further inflation has ceased. In the main, French industry has experienced a satisfactory degree of progress during the year, and public revenues have increased substantially.

East of the Rhine, however, the outlook seems to become darker rather than brighter. Inflation in Germany has proceeded without interruption until the amount of circulation now outstanding is said to exceed 1,000 billion marks. While prices are declining in most countries, both wholesale and retail prices in Germany have risen with amazing rapidity. On the basis of 100 for 1914, the official wholesale price index stood at 56600 and the retail price index at 22066, in October. The feverish demand for credit has continued to increase despite the fact that the discount rate of the Reichsbank is 10 per cent and the rate charged by other lenders, much higher. In an effort to find a stable medium of exchange, barter continues to increase in small transactions, and in at least one notable case, that of a loan floated by the Mecklenberg Government, grain has been used as a standard of value. In general, the situation in Germany grows constantly worse. While there are temporary halts in the decline of the mark, nevertheless the continued increase in the circulation at a constantly accelerated rate can have but one ending. There is no doubt that during the last few months the purchasing power of the mark has decreased in something more than a mathematical proportion to the increase in the circulation, and unless the present rate of increase is arrested within a short time, it seems apparent that the total issue will become worthless. If action is not too long delayed, there is, of course, some chance of the present issue being redeemed at some ridiculous figure, the present ratio between the paper mark and the gold mark being 2000 to 1. It therefore seems fairly reasonable to expect that Germany will, during 1923, revert at least partially to a gold basis. We cannot anticipate that her trade will be reduced to the primitive conditions at present current in Russia, which seems to be the only other alternative.

Monetary conditions in the balance of Central Europe with the exception of Czecho-Slovakia, differ only in degree from those in Germany. Austria some time ago reached a point where continued issues of fiat money failed to keep Government and business functioning, and she found it necessary to appeal for outside assistance. As a condition of certain credits granted under the auspices of the League of Nations, the Austrian Parliament agreed to enforce financial reforms necessary to balance the budget within two years, and to limit further issues of notes. A new National Bank of Austria was formed in the affairs of which the League of Nations will have an effective share of control. This Bank is to have the sole right of note issue for a period of twenty years.

Poland as well as Austria has already come to the stage to which it is evident Germany is proceeding. Their currency has depreciated to the extent that it is financially an impossibility for the Government to carry on, and

a plan has been formulated and approved by the Government by which the holders of marks will have the right to use them at their depreciated value in subscribing for a new Government 8 per cent loan which will be payable in a new unit, which it is hoped to maintain at the gold value of the franc.

It is difficult to obtain definite and reliable information regarding the situation in Russia, but it is evident that in that country also, old issues of money have become of such little value that they have largely lost all practical use. It is understood that a new issue of 1922 roubles has been made, the unit being worth 10,000 of the old roubles. More recently it has been reported that it is intended to issue a 1923 rouble which will be worth one hundred 1922 roubles. It would appear to an outsider that this is simply exchanging one worthless piece of paper for another. Under such conditions and until a new monetary system is devised having some real basis of value, such trade as is carried on must be largely barter.

Conditions in Czecho-Slovakia are a notable exception to the financial chaos of the countries surrounding her. The Czecho-Slovakian Crown which in June last was quoted at 1.9 cents, rose to 3.3 in August and has remained firm at around this value since that time. The factors entering into the strength of this currency are sane financial policies of the Government, the fundamentally sound position due to her valuable natural resources and the development of her manufacturing industries, but a very important influence has been the speculation in her currency by the less fortunate surrounding countries who were easily able to recognize therein, values not possessed by their own. The Czecho-Slovakian situation exemplifies the fact that violent changes, resulting from an improvement in exchange, are equally as disorganizing to business as a corresponding downward movement. Many of the industries of the country were temporarily paralysed, pending a readjustment of wages, etc., but are now resuming more normal activities.

Perhaps the most encouraging feature with regard to the general situation in the countries whose currencies are greatly depreciated is that they cannot long continue on their present course, and that once they have reached a crisis, means will have to be adopted which, in the long run, must bring them back to a sound monetary system which will gradually make trade with the outside world possible without its present risks.

New Process for Recovery of Sugar from Beet Molasses.

Facts about Sugar reports the discovery of a new and successful process for the recovery of sugar from the molasses of beet sugar factories both before and after treatment in the Steffens house. The process used is the invention of Mr. Heber C. Cutler who is an Agricultural Chemist of the Utah-Idaho Sugar Co. It has been tested for a period of over two months at the factory of the Springville-Mapleton Sugar Co., Utah, in the United States of America and the results have been satisfactory, more than 5,000 bags of sugar having been produced. It is reported that samples of the sugar produced show a quality equal to that obtained from first run beets. In fact, the sugar made by this new process has been marketed in the United States of America alongside that left over from the last season's beet campaign and no difference whatever has been shown. From the data available, the officials of the factory where the process was put to a practical test state that the yield on the first treatment from molasses that has been through the Steffens house is between 35 and 40 per cent of the sugar present. Approximately 50 per cent of the molasses treated is thrown off in the centrifugals and this molasses is stored until the first run is completed when it is again put through the process. How many times the treatment can be repeated has not yet been definitely ascertained but successful results have been obtained with three treatments.

The process is said to be not only efficient and economical in operation but simple and comparatively inexpensive to install. It will enable beet sugar factories to profitably utilize the molasses thrown off in the process of manufacturing sugar and thus make a substantial addition to their earnings.

It is further reported that Mr. Cutler is now making experiments with the object of developing his process for the treatment of refuse cane molasses also.

Views and Comments.

BY "ECONOMICUS".

We commend to the earnest attention of our readers the following estimate of India's industrial possibilities made by Sir M. Visvesvaraya in his Presidential address of the Indian Science Congress recently held at Lahore :—"In a country where famine is an annual occurrence, only 36% of the land available for cultivation is under tillage, the yield of wheat per acre is only two-thirds of what it is in the United Kingdom, the average yield of rice crop per acre is only half of what it is in Japan, and of sugar one-fourth of that in Java ; and again only 18 millions of tons of coal are mined out of a possible 79 millions available annually. The annual production of timber is only half or one-third of what could be exploited. There is ample scope for extension of irrigation, for increase of hydro-electric power, for extension of railways, the development of shipping and harbours and illimitable possibilities for industrial development in a country teeming in vast masses of half-employed population and enormous stores of raw materials."

* * *

Something like a farce was recently enacted by the Associated Chambers of Commerce at its meeting in Calcutta in January, 9. The Karachi Chamber of Commerce moved that the best policy for India is one of freedom in trade matters so far as revenue needs of Government will permit. The Bengal Chamber recommended discriminative protection along the lines laid down in the Main Report of the Fiscal Commission. There is nothing strange in this difference of opinion, for the members of the Bengal Chamber have also interest as producers within the country, while the Karachi members have not. But the most curious part of the proceedings was when Sir Montagu Webb, a member of the Fiscal Commission who had subscribed to the Main Report, moved, on behalf of Karachi, the resolution on free trade. Sir Montagu indeed explained that he was merely placing the free trade argument, perhaps as a lawyer would present the case of his client, but we cannot help feeling that his presentation lacked sincerity. He (or shall we say the Karachi Chamber) held that "the country had made as much progress industrially as could reasonably be expected in the circumstances of this country" and pointed out that India had recently been given a place in the League of Nations as the eighth greatest industrial country in the world and he could conceive of no moment more unsuitable for the introduction of protective policy in India than the present, when industrial nations of Europe were, so to speak, in extremis and competition was going to be so keen that even if India introduced protective tariff it was doubtful if she would be able to hold her own. Sir Montagu or rather the Karachi Chamber forgets completely that it is precisely because of this competition of the industrial nations of Europe that the Fiscal Commission as well as Indian public opinion demand protection for indigenous industries. As regards industrial progress we share the view of the Fiscal and Industrial Commissions that "the industrial development of India has not been commensurate with the size of the country, its population and its natural resources." We share, however, the doubt of Sir Montagu that even if protective tariffs are introduced, India may not be able to hold her own, but the remedy is to carry out unflinchingly and in the sole interests of India the subsidiary measures recommended by the Fiscal Commission and embodied in Chapter VIII of the Main Report.

* * *

In the course of a speech in the same Chamber, Mr. Carey, M.L.C., Bengal, is reported to have said :—"India could produce in normal years enough and to spare food for its population and with improving methods should be able vastly to increase the present production." We admit that with improved methods of cultivation, India should be able to increase the present production, but as regards India's self-sufficiency in foodstuffs or her capacity to export a surplus, Mr.Carey forgets that the main problem for the masses is one of poverty and prices. The purchasing power of the vast mass of the people is so low that though there may be enough food raised in the country to feed her 350 millions (which,

however, is not proved beyond doubt owing to the worthlessness of our statistics of production), the majority have not enough to buy what they want or retain for their own use what they produce and therefore have to starve "in the midst of plenty". The remedy is to provide greater industrial facilities and better transport facilities for the internal movement of foodstuffs and raw materials.

* * *

At the same meeting of the Associated Chambers, Mr. K. V. Rushworth of the Bengal Chamber of Commerce moved that "no alteration of nominal ratio of rupee to sovereign should be considered until the world conditions become more stable and until the internal finances of the country had been put on a sound basis; thereafter the question of reverting to Rs. 15 to the sovereign or any other ratio should be examined by the Government in consultation with the various Chambers of Commerce in India, but should not form the subject of inquiry by a special Commission as such Commissions have an unsettling effect and are liable to destroy confidence." We endorse Mr. Rushworth's view that Currency Commissions are entirely useless, though for a slightly different reason, *viz.*, that the needs of Indian currency are as clear as daylight and the previous Commissions have said all that is to be said regarding them. Our opinion is that a financial injustice is perpetrated on India by the adoption of a gold or sterling exchange standard, by making India dependent on the London Market. In the name of stability of exchange we are asked to sacrifice what is still more important, *viz.*, an elastic internal currency and the benefits to trade and industries generally of retaining Indian resources in India itself.

* * *

In reply to a question regarding stores purchase Mr. Chadwick, the Industries Secretary, stated in the Council of State as follows:— "The Government of India have made it clear that the High Commissioner should deal with the tenders *on strict business principles* with due regard to prompt delivery" (italics ours). We would like to know what action the Government of India has taken or proposes to take to carry out the recommendations of the Industrial Commission regarding stores purchase contained in Chapter XII of the Report. It is a remarkable coincidence that about the same time the Industries Secretary reiterated his faith in purchasing stores "on business principles", the British Empire Producers' Organization in Great Britain addressed a letter to the President of the Board of Trade asking for a definite assurance that preference would be given in all contracts of public bodies to firms employing British Empire labour and using British Empire materials. (We may mention here for the benefit of our readers that in such an arrangement the people of Great Britain, capitalists and labourers, will fare best.) This premier Organization suggests that the Empire tender using Empire produced material to extent of at least 75 per cent of the total material used and employing only British Empire labour should rank for purposes of acceptance of tenders below any foreign tender or as one as fully complying with the conditions, unless the foreign competitor quoted a price at least 15 per cent below that of the British tender. We are further informed by Reuter that Sir Eric Geddes, President of the Federation of British Industries, has written to Mr. Bonar Law urging the Government to refuse to sanction loans on expenditure unless British materials are specified. One cannot accuse Sir Eric Geddes as being less solicitous about the tax-payers' money or less businesslike than the Government of India. What objection is there, we ask, for the Indian Government to purchase stores locally as far as possible even at a higher price, or for the members of the Legislative Assembly to refuse to sanction loans or money for purchase of stores unless Indian materials are specified ?

The Sydney Correspondent of the *British and Colonial Printer* says :— "A good deal of stir has been caused in Australia by an exposure of the waste attaching to the Government Printing Office. At the request of the treasurer, Mr. Cocks, an inquiry into the Government Printing Office was conducted by Mr. Brooks, M.L.C., one of the most prominent employing printers of Australia and perennial president of the Master Printers' Association. Though Mr. Brooks found there was "nothing wrong with the machinery and plant, or the efficiency of the managers and overseers," he indicates the existence of gross waste of tax-payers' money in unnecessarily voluminous and belat edGovernment publications. The cost of production was high as compared with that of private firms, this being largely due to concessions to employees in the matter of leave, holidays, short hours, and salaries."

Economic Reviews Reviewed.

Increasing our Cultivated Area.

Dr. Leslie C. Coleman, M.A., Ph.D., Director of Agriculture in Mysore has contributed to "The Journal of the Mysore Agricultural and Experimental Union," Vol. IV, No. 3, an informative and instructive article under the above title. With regard to the use of tractors for tilling extensive areas in Mysore and Southern India, Dr. Coleman writes:—"The initial cost of a tractor and the implements which are necessary to accompany it is fairly high. From Rs. 5,000 to Rs. 6,000 would be about the minimum required for a light tractor and its implements, while heavy tractors cost much more. The depreciation on tractors is very heavy. Even in America where the general skill of farm labour is very much higher than in India, the rate of depreciation is usually placed at 20 per cent. The annual repair bill is likely to be fairly heavy and what is much worse where parts break and have to be replaced, it usually takes several weeks to procure the spare parts. A number of cases have come to my attention where tractors have been kept idle for months owing to the difficulty of obtaining these replacements.

"This is the greatest difficulty standing in the way of tractor use in South India. Ploughing operations must be timed to catch the rains and a delay of several weeks would be practically fatal to cultivation. An agriculturist would therefore have to keep two tractors to insure that his work should not be held up by breakdowns or would have to keep bullocks and bullock implements in fairly large numbers as a standby. If he had not a sufficient labour supply even this would not avail him. Finally the actual cost of ploughing with a tractor is at least twice as great as ploughing with bullocks.

"A medium tractor can be safely taken to do as much ploughing and cultivating work as six pairs of bullocks and the saving in manual and bullock labour is therefore great. If the large-scale agriculturist could be sure that his tractor would not break down or if it did that he would be able to get spare parts within a day or so, this saving in labour might make it worth his while to undergo the extra expense for his tillage operations. Until he has this assurance, I believe, the purchase of a tractor with the intention of depending upon it would be a risky business.

"If we cannot in the immediate future expect the tractor to solve the difficulties in the way of bringing the maximum arable land into cultivation and keeping it cultivated, where are we to look for help? It is, I believe, firstly in the rapid introduction of improved bullock-drawn implements and secondly, in the improvement of our draft cattle so as to make them capable of pulling really efficient improved implements. The opinion which is still at times expressed but which has lost ground rapidly during the past few years that a very large portion of our draft cattle are incapable of pulling efficient improved implements is quite wrong. A very large proportion of draft cattle more especially in our maidan districts are capable of working these implements satisfactorily. However, even in the maidan districts there is immense scope for improvement, while in the malnad districts the poor quality of the cattle is undoubtedly a serious obstacle in the way of introducing improved implements. The small Meston plough and the somewhat large Eureka plough which are at present being sold in considerable numbers in those districts are undoubtedly a big improvement on the country plough but they are far from being an ideal implement and should be replaced with something better as soon as an improvement in draught bullock will admit."

Indian Railways and Industrial Development.

Under the above title there is, in the "Asiatic Review" for October 1922, a suggestive article by Mr. Cyril S. Fox, B. SC., M.I.M.E., F.G.S., of the Geological Survey of India. In this article, Mr. Fox tells us that the Government of India borrowed last December £10,000,000 at 5½ per cent in the London market. It is stated that this money will be used in the improvement of the existing railways and in the construction of new ones. The East India Railway have surveyed an alignment for a new line from Dhanbad through Kuranpura Coal fields to Sone valley near Daltanganj. The Bengal-Nagpur Railway contemplate the

construction of a line from Raipur in the Central Provinces to Vizagapatam and also an up-to-date harbour at Vizagapatam in conjunction with this scheme. The same Railway have sanctioned a 65-mile line from Cuttack to Talchir coal field. They are also contemplating the extension of their narrow gauge Purulia-Ranchi-Lohardaga line in the north. There are at least four workable coal fields along this line. The demand for coal is increasing every year. The erection of metallurgical and other coal and coke consuming works in rapid succession necessitates the working of additional coal fields in the country. The proposed lines already mentioned, when constructed, will better railroad communication and transportation facilities. The Tata Iron and Steel Company of Jamshedpur would have increased their production by 3 to 5 per cent if there had been sufficient transportation facilities. The Bengal Iron and Steel Company of Kulti have also been working for some years and these companies have, of late, increased their output capacity. Other works, such as The Indian Iron and Steel Company, are under contemplation. To help the development of these great enterprises, the opening of new lines, and the improvement of the old ones in regard to the supply of waggons and locomotives, are a matter of necessity. Mr. Fox sums up the present situation of the connection of industrial development and the extension of railways in India thus :—"Nevertheless, there is a great desire to press on to the goal of solid commercial enterprise. This requires money, not in lakhs or crores, but in hundreds of crores of rupees. If this money could be produced and utilized in the establishment of railways and the development of industry, the future prosperity of India is assured. Something is being done now. The recommendations of the Railway Committee have been approved by the Government of India, and an expenditure of 150 crores of rupees (£100,000,000) is to be devoted to Indian railways during the next 5 years. The first 30 crores of rupees have been allocated as follows : half for the duplication of existing lines, remodelling station yards, strengthening bridges and the opening up of lines to certain coal areas ; the other half will be devoted to rolling stock—half of this for passenger carriages and the remainder equally for locomotives and goods waggons."

Possibility of using Town Refuse as Manure.

The "Journal of the Ministry of Agriculture" for November 1922 has a useful article on the above subject from the pen of Sir John Russel, D.Sc., F.R.S. We take the following extract from his article :

"It is not easy to arrive at any clear estimate of the fertilizer value of so mixed a material as town refuse. Analysis alone does not afford sufficient information, and field trials, which constitute the only reliable means, are very slow.

There is, however, a certain body of experience on the part of farmers who have used town refuse on which one may usefully draw for guidance. Broadly speaking, town refuse has given successful results in two cases :—(a) On heavy land farms or allotments where it is used for root crops, cabbages, etc. (b) For raising the level of low-lying wet ground and forming new land which can be used for allotments. Considerable quantities of town refuse have been used by farmers on the heavy London clay soils of the Home countries. About 10 tons per acre is a usual dressing. It should be spread before the winter ploughing begins so that it can be well worked into the soil. It then lightens the stiff soil and facilitates cultivation generally and good root and other crops are usually obtained. Types and composition of refuse :—(1) "Dry refuse" the contents of ashpits. (2) Night-soil, produced in towns where the pail system is used. It is dried and granulated and contains some 5½% nitrogen, 5½% phosphates, and 2½% potash. (3) "Mixed refuse" *i.e.*, dry refuse plus night-soil mixed in certain proportions. A 50% mixture offered at Rochdale contains 2.9% nitrogen, 3.6% phosphates (half being soluble and half insoluble) and 1.2% potash. (4) Street sweepings and other wastes.

Of these the street sweepings and the unmixed night soils are well known to farmers and are often easily disposed of. One of the large London districts disposes of its street sweepings at 10*s.* per ton on the barge. Night-soil in the dry form, unmixed with ashes, is now sold by Rochdale, Warrington and probably other corporations at a figure of about £7 per ton. If the methods used in these places were generally applicable to town and city conditions the problems arising out of the waste of sewage would be solved and the shortage of organic manures on the farm would be greatly relieved ; but we must expect these methods of conservancy to be superseded and therefore we must turn to ashpit refuse as the only important source of this type of material.

In its crude form the refuse contains a small percentage of cans, bottles, etc., of no use on the farm but indeed constituting a nuisance. In the more progressive towns these are removed and the material undergoes a certain amount of sorting to remove coal, cinders, rags, bones, scrap, metal, etc., for all of which a market can be found. Thus at Falkirk, where a good modern plant has been installed, the cinder amounts to 35% of the total collection. It has a calorific value of 8000 B.T.U. per lb., and after being taken out is used for steam raising at the local electricity station. Whatever the preliminary sorting treatment the remaining material is disintegrated to break up the larger and coarser materials."

Right Fiscal Policy for India.

Professor Pramathanath Banerjea, M.A., D.SC., of Calcutta University has contributed to the October-November issue of the "Calcutta Review", a scholarly and exhaustive article under the above title. In this article, after briefly mentioning the circumstances of India at present, he says that an enlightened system of protection, by which should be understood all those measures which will tend to promote the economic interests of the country, is needed most in India. The measures may be positive as for example, the grant of bounties, subsidies and concessions in suitable cases, the establishment of technical colleges, the provision of credit facilities, the proper regulation of railway and steamship freights, etc. A tariff is, for instance, a negative measure. Mr. Banerjea gives us a list of large-scale industries, which require protection in India, *viz.*, steel and iron manufactures, sugar, glass, paper, leather, rubber goods, vegetable oils, silk and woollen goods, and cotton fabrics of the finest sorts. Industries of a comparatively small size, such as cement, pottery and soap, he says, ought to be protected. Writing about the constitution and functions of the Tariff Board, Mr. Banerjea says, "The investigation of various questions, both scientific and administrative, connected with the tariff, will require the establishment of a permanent organization. Of course, the final decision of questions of fiscal policy will rest not, not with this body, but with the Indian Legislature. It may, however, contribute towards intelligent discussion by supplying the necessary information. The Tariff Board will collect all available data on the tariff laws of different countries and the economic and other conditions under which foreign industries work as compared with the industries of India. It will constantly scrutinize the returns of the internal as well as the external trade of India, and carry out large schemes of investigation from time to time. It will enquire into the operation of the customs system of the country including questions relating to railway rates and shipping freights. The Tariff Board will be in close touch with the industrial departments of the Government of India, and the Provincial Governments, and will keep a watchful eye on the progress of the various industries, specially those which are protected by the tariff. Lastly, it will be the duty of the Board to investigate the claims of particular industries for state assistance and to suggest changes in the customs laws of the country.

"The functions of the Tariff Board should be of a purely advisory character and it should not be invested with either legislative or administrative powers. No attempts should be made to take tariff questions out of the hands of the Indian Legislature. As Professor Tausigg, President of the first Tariff Commission of the United States, says: "Nobody, however expert, can settle, still less dictate, the position which the country shall take on controverted political and industrial questions."

"The constitution of such a Board must be devised with great care. The President of the Board should be a judicial officer of high standing or an eminent lawyer and he should be assisted by a whole time expert secretary. There should be two other members of the Board, both of whom should be officials elected by the Legislative Assembly. The Legislatures should elect only such persons as have no private interests of their own to serve, and are able to consider questions relating to the Tariff with sole regard to the welfare of the country. Economists and public men possessing a full and detailed knowledge of the industrial conditions of the country but not connected, either directly or indirectly, with any industrial or commercial concerns, will be fit persons to serve on the Board. On particular occasions, when matters relating to particular industries are under consideration, representatives of such industries and also of the general public may be appointed as co-opted members or assessors, with power to take part in the deliberations, but not to vote. Sinister influence is the chief danger of a protective system and must be avoided at all costs. No pains should be spared to secure and maintain the honesty, efficiency, and independence of the Tariff Board."

Professor Banerjea concludes the discussion of the Tariff question thus :—

"A protective policy, wisely applied, will be helpful to the economic reconstruction of India and will give her a place among the advanced nations of the world. Protective duties will, very probably, add to the cost of living. But a price has to be paid for everything that is worth having. Protection will prove useful if, simultaneously with its adoption, there is a growth of individual enterprise. The State also must adopt various measures to encourage industries. Pioneering and demonstration may often be found extremely useful. Subsidies and bounties may be granted in suitable cases and dividends may sometimes be guaranteed to Indian companies. Proper banking facilities should be afforded to indigenous manufacturers. A comprehensive scheme of technical education should also be devised. But the most effective way in which the State will be able to assist Indian industries will be by the local purchase of stores required for the use of the various departments of the State including the railways."

Housing of Indian Unskilled Workmen.

Mr. W. H. Wiser has contributed a suggestive article on the above subject in "The Local Self-Government Gazette" for August 1922. For the industrial advancement of a country efficient labour power is an absolute necessity. The inefficiency of the Indian labourer has become proverbial. Low wages and high house rents have contributed, to some extent, to the deterioration of labour power in India. Mr. Wiser sums up the situation of unskilled workmen in regard to the housing problem thus :—

"Some countries have been wrestling with this problem for a long time. What has been the solution ? The two agencies at work are Government and private organizations.

1. By Government aid :

(a) Through the Municipalities as in Germany and in some parts of England.

(b) By lending money at a low rate of interest to non-commercial housing companies of a philanthropic nature or co-operative societies as in England, Germany and Italy.

(c) By the negative method of tax-exemption on houses of approved standard and rental as in Canada.

2. By Private Agencies :

(a) Philanthropic Trust Funds. In these funds there are no stock-holders and no dividends. Whatever of the rent remains, after paying for upkeep, goes back into the fund.

(b) Limited Dividend Housing Companies. The donors of these funds are prompted by philanthropy and are content with a small interest.

(c) Housing by employers. All know about Port Sunlight, Bourneville and similar employers' towns and villages.

(d) Chamber of Commerce enterprises. An American venture where housing companies are formed sometimes with limited dividends and sometimes without.

(e) Co-operative Housing Societies. These societies build and rent houses at cost prices and are common in England.

To sum up, the following facts are outstanding :—

1. The most acute industrial housing problem in India as in the rest of the world, is the satisfactory housing problem of the unskilled labourer.

2. Indian Municipalities do not show enough concern about facilitating the housing of the unskilled workers.

3. It must be somebody's business to see that the matter is adequately handled.

4. The housing of the unskilled workman is the joint responsibility of Government and the employer together with the co-operation of the Municipality.

5. A study of matters of meeting housing problem in England, Germany, Belgium, France and New Zealand reveals much of value for use in India.

6. In building houses for unskilled workmen, an attempt should be made to approximate the minimum sanitary and human needs of such an employee's family.

7. A small verandah and a court-yard are desirable in an unskilled workman's house.

8. Some employers had made valuable contributions to the housing needs of their workmen.

9. The formation of limited-dividend associations affords an admirable opportunity to private philanthropists for valuable service.

In conclusion for the future we may assume that, as in the past, there will be philanthropic employers, who will build houses for their unskilled workmen with no thought of remuneration. At best, however, their houses will accommodate only a few of those who will be in need of houses. What of the remainder ?

As in other countries the Indian Government must co-operate with employers in meeting the problem and no handicap must be

permitted on the part of the Municipality. This housing need is far too urgent to be left to mere chance."

Mysore Iron Ore.

A correspondent writes to the "Times" :—

The Government of Mysore have met with considerable difficulties in carrying out their scheme for utilizing the extensive fields of iron ore in that State. Though it is now nearly four years since operations were started in connexion with the Bhadravati Iron Works, the manufacture of pig-iron and of the by-products of the wood distillation plant has not yet been begun.

It was expected that a beginning would have been possible in March of last year, but the slow progress made with the erection of the plant and the transport of the ore and fuel made the start impossible. The original estimates of expenditure relating to different parts of the scheme have been increased three-fold, owing to the increased cost of machinery and the inclusion of certain essential items not provided for at first. The managing agents hold out hopes of a beginning in November of this year, but there is considerable uneasiness about the prospects.

Obstacles to Success.

The original scheme held out a promise of good results, but in view of the prevailing conditions the Government will be more than satisfied if a small return is made on the large sums invested. The price of pig-iron is low, and the demand for charcoal pig-iron is very limited in India and the East. There is practically no market in India for the by-products, such as alcohol and acetate of lime, and these have therefore to be shipped to Europe, entailing a heavy cost for transport. The cost of operation has also greatly increased, owing to the enhanced cost of all raw materials. In his recent review of the prospects of the venture, the Dewan of the State said :—

"It is, no doubt, disappointing that, just at the time when the magnificent plant is ready for operation, the market conditions are so unfavourable, both as regards pig-iron as well as the by-products. I can assure you, however, that the situation, serious as it is, is under careful examination with a view to improve, if possible, the financial prospects, and reduce the chances of loss. At this stage it will be highly undesirable to stop further progress on the scheme, which is nearing completion, and to seal up the plant, to open it for working at a later stage when the market conditions improve, for the State, in any case, will have to pay interest on the capital that has been invested, which will operate as a heavy weight on the administration."

From many points of view it will be regrettable if this scheme should fail, for it will certainly discourage those who are attempting to develop the industrial life of the State. It is true this particular scheme was looked upon with great distrust by many responsible members of the service, but the officials responsible for its initiation carried the day, and it rests with the present administration to make the best of a difficult situation.

Reserves of Ore.

The Shimoga district of the State, where the ore is being mined, has large supplies, and as the result of extensive surveys and investigations made by a leading American engineer, Mr. Perin, the Government decided to launch the scheme. The ore found in this district is principally hematite, with some magnesite. The ore is distributed somewhat unevenly, but the grade, on the whole, is good. The question of fuel supply was the most serious, for coal is not obtainable at reasonable prices in Mysore. There are large jungles in the immediate vicinity, and it was decided the smelting should be done by means of charcoal. Large areas of forest have been divided into blocks, and the cutting will be carried out on a definite plan. It is believed the supply of timber will always be sufficient to meet the demands of the works, but there is no doubt the cost of cutting, transport, etc., will be heavy. If the wood distillation plant works successfully and a market can be found for the by-products, the expense will be considerably reduced. The fluxes will be supplied from another part of the State, and these are said to be quite satisfactory. It is possible, if the scheme justifies itself, that at a later date electric power will be brought from one or other of the projected hydro-electric schemes for the smelting of the ore.

One of the best ore-bearing areas is that known as the Kemmangudi scarp, where the areas of ferruginous quartz extend over fifty acres, and the experts state that the ore can be obtained to a depth of 50 ft. On the assumed basis of an average depth of 25ft., the total tonnage would reach approximately four million tons—that is, at the rate of two tons per cubic yard—out of which about 50 per cent would have to be rejected as unsuitable for smelting. The remaining two

million tons would then be turned into the blast-furnace. The yield is estimated at 500,000 tons, with 61 to 62 per cent of iron and 0.05 per cent of phosphorus, and 1,500,000 tons, with 56 to 57 per cent of iron and 0.09 per cent of phosphorus. According to this estimate, therefore, this area alone would bring in three-quarters of a million tons of iron.

The Government of Mysore have made good arrangements for the workmen, and the little village will be steadily developed as the project progresses.

Advisory Committee of the Bombay Department of Industries.

To fill the vacancy on the Advisory Committee of the Department of Industries caused by the resignation of Mr. A. T. Arnall, the Government of Bombay are pleased to appoint Mr. A. J. Hood, M.L.C., for a period of three years.

The Advisory Committee now consists of the following members :—

Ex-officio Chairman.—Director of Industries.

Government nominees.—Sir Alfred Chatterton, Kt., C.I.E.; Ambalal Sarabhai, Esq.; G. B. Trivedi, Esq., M.L.C.; Mangaldas Girdhardas, Esq., M.L.C.; Rao Bahadur Raoji Ramchandra Kale, M.L.C.; Mahomedbhoy Currimbhoy, Esq.; Jehangir Bomanji Petit, Esq., M.L.C.; Purshottamdas Thakoredas, Esq., C.I.E., M.B.E.; A. J. Hood, Esq., M.L.C.

Nominee of the Chamber of Commerce, Bombay.—N. Birrel, Esq.

Nominee of the Chamber of Commerce, Karachi.—Sir Montagu de P. Webb, Kt., C.I.E., C.B.E., M.L.A.

Nominee of the Indian Merchants' Chamber and Bureau.—Lalji Naranji, Esq.

Topics in the Journals.

Poona Agricultural College Magazine, (Feb. 1923).—The Cocoanut Inflorescence, by C. X. Furtado, B.Ag.

Bengal, Bihar, and Orissa Co-operative Journal (January, 1923).—Co-operative Constitution of Holdings, by Otto Rothfeld, I.C.S.

Journal of the Ministry of Agriculture (British) (Feb. 1923).—Co-operative Associations in Canada.

Tropical Agriculturist, (Jan. 1923)—Rubber: General Principles of Economic Planting, by A. C. Pinching.

The Agricultural Journal of India (January 1923).—Tractor Cultivation at Lyallpur, Punjab, by A. R. Stuart and D. P. Johnston.

Social Service Quarterly, (Jan. 1923)—The Housing of Indian Unskilled Workmen, by W. H. Wizer.

German Import into India.

A study of statistics of India's foreign trade shows how very definitely Germany has established herself in the market. Examples given below are of interest.

Germany has again monopolized the dye market, the value of imports into India for August amounting to Rs. 8,22,914, compared with Rs. 1,60,834 from the United Kingdom. During the five months ended August 31, the total value of dye imports from Germany was Rs. 78,04,168, while the value of the importations from the United Kingdom was Rs. 10,28,413 only. There is a similar story as regards cutlery, Germany sending goods during August valued at Rs. 1,30,763, the figure for the United Kingdom being Rs. 74,507. The hide trade which was notoriously German before the war, has once more reverted, the reason chiefly being that Indian hides do not find favour with British tanners. Cow hides to the extent of 1,155 tons valued at Rs. 11,67,512 were exported from India to Germany last month while the United Kingdom accepted hides worth Rs. 3,469 only. During the past five months Germany has taken 4,424 tons of cow hides from India, representing Rs. 46,92,352, the share of the United Kingdom being Rs. 2,08,654.

Recently Germany took large consignments of raw jute from India—6,440 tons worth Rs. 28,43,089—the share of the United Kingdom being 6,947 tons valued at Rs. 27,52,726. Statistics for the past five months show that Germany has brought raw jute worth Rs. 1,78,54,322, this being about 300 lakhs more than the figures for the United Kingdom.

The following table showing the value of certain German imports into India during the past five months is also instructive :—

	Rs.
Glass and glassware	20,11,010
Hardware	52,85,099
Ale, beer and porter	8,15,101
Machinery and millwork ..	36,86,995
Printing paper	5,42,933

Economic Notes.

INDUSTRIAL, AGRICULTURAL, EDUCATIONAL AND GENERAL.

The Madras Government have appointed a committee of ten members with Mr. A. Y. S. Campbell, C.I.E., I.C.S., as President to assist them in framing rules under the State aid to Industries Act.

* * *

A milk is, as reports the "Scientific American" extracted from certain oil seeds, which contain the greatest possible portion of the nitrogenous substances that are originally present in the seed itself. The product is secured by adding quartz and emery to the oil seeds and extracting the milk by passing the mixture through a centrifugal machine. From 100 grams of seeds there is obtained one litre of the milk, which has the following composition: 2% nitrogenous substances, 3.5 % of fat, 90% water, 2.5 % of carbohydrates and 1% mineral salt. The milk is about two-fifths as cheap as common cow's milk. Certain ferments the nature of which is not disclosed when added to the milk give it a taste which resembles that of cow's milk very closely. This artificial product is easily digested and possesses likewise the coagulating properties of cow's milk. Hence, it can be converted into various sorts of curdled and fermented milk products.

* * *

Cocoanut oil, we are told, gives a very hard soap which lathers very freely and has a beautiful white colour. Soap can be made from it with the greatest ease by the cold process. Cocoanut oil soap made by the hot process is almost too hard. It requires a larger quantity of alkali for saponification than other oils, and consequently a given quantity of Cocoanut oil gives a larger quantity of soap. No doubt these are the reasons which have led to its extensive use by small manufacturers in Meerut and elsewhere. But the great drawback to the use of Cocoanut oil for the manufacture of soap for the toilet is the smell, which is very difficult to remove or disguise by perfumes. Nevertheless, this oil is used to a large extent in Europe and America in admixture with other fats and oils for the manufacture of toilet soaps, at least so Mr. George tells us in the "Malayalam Agricultural Journal" Vol. X, No. 2, to which we referred in November, p. 171

An interesting controversy has taken place on the relative merits of sponge-pressed and machine-made lemon oils. Particularly, California and to a less extent Sicily, have automatic machines in which the whole lemon is crushed, the juice and the oil being separated by centrifugal appliances all in the one machine. The correspondence published this month, shows a stout defence of the American domestic oil by a producer in response to a suggestion of its inferiority to the general Sicilian product.

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What the press of India is to-day the press of England was before the coming of Lord Northcliffe. Before he set the pace in Fleet Street journalists were the worst paid craftsmen in the country, whether as staff men or contributors. He made journalism a career for all the talents. He raised the level of the profession, and opened up new avenues for achievement. Until he began to own newspapers the focus of journalism had been political news and political discussion. Lord Northcliffe was the first man to realize that such subjects had only a limited appeal. So in India, the newspapers which apart from politics make any serious effort to be interesting may be counted on the fingers of one hand. Lord Northcliffe saw the limitless opportunity for a journalism which should be not a popular education but a popular entertainer, and should exert its influence not by argumentation but by suggestion—suggestion enforced by the emphasis of repetition. When India really finds her Northcliffe and her awakened millions apprehend the lure of the newspaper, the Press for good or ill will be more powerful in the land than the Legislatures and the Congress rolled into one! Of course the War has changed the face of the world and the trend of the newspaper. The new journalism in India besides entertaining its readers must really teach the people how to live, not merely how to vote and intrigue. Arts and crafts, the problems of trade and industry must be handled attractively by staffs of well-paid, well-trained writers and not by the few devoted but impoverished workers of to-day.

The British Industries Fair (Birminghan) was first held in 1920, has been held annually since, and is growing rapidly in importance and significance. Believing that this fair is, particularly in the present state of world trade, a vital part of Britain's commercial peaceful propaganda, all concerned are strenuously engaged in making the 1923 fair to be held from February 19 to March 2, more imposing and attractive than any of its predecessors. The exhibits will comprise the following among others : Brass foundry, hardware, iron-mongery, metals, construction, building, decoration, power, lighting, heating, cooking, ventilating, engineering, agricultural machinery and implements, mining machinery and appliances, motors, motor-cycles, cycle and accessories, perambulators, guns, sadlery, harness, fishing tackle, brewing, distilling and catering plant, etc.

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In many electrical installations using direct current the energy consumption as deduced from the reading of an ampere-hour or quantity meter on the assumption that the supply voltage is constant, and that the ampere-hours are therefore a true measure of the watt-hours. In practice the voltage of supply is so nearly constant that the error introduced by this assumption is very small. Nevertheless, there is a considerable demand for meters which take voltage variations into account and thus gave an indisputable measure of true energy consumption. This is done very simply by the induction type alternating current meter but not so easily in the case of direct current. The O'Keenan ampere-hour meter, which is a motor meter without braking, has lately been adapted to the measurement of true energy by the addition of a heating coil connected across the supply mains. The motor element of the meter remains unaltered, and as this is unbraked and operated by about half a volt there is no sparking or burning on the commutator. In the ampere-hour meter the motor is connected across a shunt in the main circuit, hence its speed varies with the value of the main current. In the new meter, however, a compound shunt circuit is employed. The two branches of this shunt together carry the whole main current, but one branch is of special resistance material and is heated by the pressure coil connected across the mains. As a result the speed of the motor varies with the product of the main current and voltage—*i.e.*, with the true power consumed by the load supplied.

According to a Reuter message from New York, funds deposited by Herr Hugo Stinnes in various New York Banks have been attached in a suit brought by Mr. James Stillman, the banker for $2,055,185 for services in promoting a loan of $200,000,000 there, according to the plaintiff. Mr. Stillman described Herr Stinnes proposed financial floatations. One was to obtain in America the sum of $100 millions upon Herr Stinnes' promissory note. This money was to be used for the purchase in the United States of billions of marks, with which it was intended to buy mortgages held by the German Hansa Corporation. After these mortgages were secured, according to Mr. Stillman, Herr Stinnes planned to send them to the United States as collateral security for a two billion dollar loan, based on pre-war values. Mr. Stillman, however, refused his co-operation.

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According to a message from the *Times* Paris correspondent, M. Eduard Belin has devised a method for secret wireless communication. As in his apparatus for the transmission of script and pictures by wireless or by telephone, he employs a device for securing the almost absolute synchrony of motors at the receiving and transmitting stations. These actuate a cylinder through the medium of six concentric discs provided with notches and levers which, when engaged, revolve the cylinder. Like the dials of a secret lock, they can be set to an almost indefinite number of combinations. The particular combination at which a message is to be passed is selected beforehand by the receiving and transmitting stations, and so long as it is known only to them secrecy is secured. It is possible, however, that, by long and patient waiting, a stranger might note the periods of silence and so contrive to read the messages. M. Belin has added an adaptation from a well-known mechanical cipher in which the significant words occur in the course of an apparently continuous page of writing or printing, but can be detected by placing over the sheet a secret stencil cut so as to reveal only the message. The intervals of silence in M. Belin's device are filled by messages sent out from a subsidiary apparatus and with no other purpose than to conceal the existence of the gaps. Further details of this invention are awaited with deep interest, as the use of wireless, in peace and in war, could be expanded almost indefinitely were it possible for the communications to be secret.

Stowe House, the famous seat of the Dukes of Buckingham and Chandos, is to be converted into a great public school modelled on the lines of Eton and Harrow. It has been bought with that intention by a committee of which Lord Gisborough is chairman, and the price paid to Mr. Harry Shaw, the present owner, is £30,000. Stowe House is admirably suited for the purpose. It has magnificent rooms which can be easily altered to suit class purposes; there is extensive accommodation for boarding, and its beautiful woods and fields afford ample ground for recreation. Many alterations are being planned, and the school will probably be ready for occupancy at the beginning of next autumn. Mr. Shaw, whose name was recently mentioned in connection with the alleged sale of honours, acquired the mansion and some of its art treasures in July of last year for £50,000, and there was talk at the time of his presenting the house to the nation.

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It is as certain as anything is that if intensive industrialization is adopted as the economic policy of India, the major result will be the addition of the problems of seasonal unemployment to the many others which at present pursue its Government and people. To avoid these results, India has only to remember that her greatest source of wealth is her agriculture. Industry should be subsidiary to that. Indeed, the first essential of a successful industrial expansion is a great expansion of agriculture. Moderate efficiency applied to agriculture in this country, the checking of the fragmentation of land, the application of modern instruments to the cultivation of the land, easily within the competence of the ryot through co-operation—witness Denmark—would double the output of agriculture, double the spending power of the peasants and accordingly create an insatiable market for the products of India's factories. The great market for Indian manufactures in the future must be India. This is the whole, and just, assumption at the bottom of the Tariff Commission's Report. And when this truth is realized, it will be realized also that every forward move made in industry must be accompanied by an advance in agriculture. The ryot will feed, and feed cheaply, the factory worker and the factory, and in return the latter will supply his needs of manufactured articles. Reciprocity and balance between the field and the factory must be the key-note of India's future economic policy, says the *Times of India*.

At a recent meeting of the Senate of Calcutta University the report of an influential Committee appointed to investigate the reconstruction of the University was discussed. The report which was adopted stated that a bill on the subject had already been prepared embodying provisions differing in vital respects from the proposals of the Sadler Commission. The signatories considered that the situation was in consequence such as to give rise to deep anxiety and suggested that the Senate should endeavour to arrange without delay for interviews by a small deputation with various authorities concerned to explain the point of view of the University. The Senate thanked Sir P. C. Roy Palit, Professor of Chemistry, for accepting the professorship for a further period of five years without remuneration and offering his salary to be utilized for the furtherance of the Department of Chemistry.

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Mr. N. V. Joshi has contributed to the "Agricultural Journal of India" an interesting article on the conservation of nitrogen in the dung and urine of cattle, which are the chief constituents of farmyard manure in this country. Owing to fermentation and drainage serious losses of nitrogen occur during their storage. The results of this investigation have been thus summarized:—"The losses of nitrogen from cattle dung when stored separately are small under both aerobic or anaerobic conditions of storage. In the case of urine great amounts of nitrogen are lost under aerobic conditions while under anaerobic conditions the losses are negligible. Covering the surface of the urine with a layer of some kind of oil such as kerosine, mustard or cocoanut brings about the necessary anaerobic conditions and this method has proved effective in preventing losses of nitrogen from the urine. Among several substances tried to prevent losses of nitrogen from urine occurring under aerobic conditions of storage, sulphuric acid, superphosphate and formalin have proved effective but their cost is expected to be prohibitive in practice. Very great losses of nitrogen have been observed when straw and soil were used as absorbants for urine. These absorbants would therefore not prove of value in conserving the nitrogen of the urine. Since greater losses of nitrogen occur in the mixture of cattle dung and urine, it is advisable to store cattle dung and urine in separate pits instead of following the prevalent practice of mixing them in storage."

A British Official Wireless message brings information that the official returns of the County of London just issued give the population of the capital as 7,480,201. The area known as "Greater London" has increased its inhabitants by over 500,000 during the last 10 years. In the administrative county consisting of the city and 28 metropolitan boroughs, the population was 4,484,523, a decrease of over 37 per cent in ten years, pointing to a tendency to seek homes farther from the place of work. The city, as the business heart of London is called "where many work, but few sleep," is most thinly populated for there are only 20 per acre on the most famous square mile in the world. There are now 341,365 more women than men in the administrative county, an increase of 25,922, while the proportion has risen from 1,127 per thousand men to 1,165. Nearly 26,000 of this increase is accounted for by widows. Of this number over 11,000 are in an age group of 20 to 39 and are nearly all war widows.

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The English Banks report increasing signs of an improvement in the trade position and outlook. Prices of raw materials are rising, and the demand for coal is expanding on home and foreign account. Freight markets are distinctly firmer than they were a few weeks ago. The weakness of the continental exchanges, however, is having an adverse effect on some markets. Iron and steel trade conditions last week were not very active, but the pig iron market retained a steadier tone. There appears to be less semi-finished material from the Continent now on offer. An active and strong market was experienced for Welsh steam coal. Shipments continue on a very large scale, and there are still numerous export inquiries. There was some realizing in tin, but a sharp recovery followed towards the end of the week. Little improvement was reported in the cotton trade, while the wool market continued firm. Wheat prices were fairly well maintained. Tea was in strong demand throughout the week.

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Since 1917 the electric furnace has been employed to some extent instead of the usual cupola to melt cast iron. At first it was used for melting the iron from the cold, but it was soon discovered that this was not economical, since a given amount of electrically produced heat cost more than the same quantity of heat from coke. The electric process shows to the greatest advantage in the secondary stages of the melting process, the refining and the superheating. The electric furnace is capable of delivering iron that is superheated to any desired degree, reduced in sulphur as required, deoxidized, and with the carbon, silicon, and manganese adjusted to the desired standards. One of the first companies in the United States to instal and use an electric furnace for this purpose was the Lunkenheimer Company of Cincinnati. At first it used its Heroult furnace for melting iron from the pig, but since this was not economical, the practice was soon abandoned in favour of what is termed the tandem process, in which the iron is melted in the cupola and then transferred to the electric furnace. According to the chief metallurgist of the company, the electric furnace is at its best when coupled with a chemical laboratory, so that by sampling the iron as soon as it is transferred in a molten state from the cupola as many elements as desired can be determined and the proper additions made before the metal is poured. The combination of the electric furnace and the laboratory can also be made to yield the best possible machining qualities consistent with the physical properties required by the purpose for which the iron is intended. Perhaps the most valuable feature of the electric furnace for melting cast iron is that it permits the sulphur content to be reduced quickly. At the Lunkenheimer plant cast iron with 0.18 per cent of sulphur can be reduced to 0.07 per cent in thirty minutes. As the percentage of sulphur in scrap tends to increase, this characteristic of the electric furnace should be of advantage to firms which are situated at a distance from sources of good pig iron and must therefore depend largely upon scrap. The sulphur limit in castings depends upon the purpose of the castings, but in one instance where large castings are used they invariably became "dirty" at an important machined point whenever the sulphur exceeds 0.10%. If iron contains an excess of sulphur, it generally carries other objectionable impurities which the desulphurizing process tends to remove. Superheating in the case of iron, is synonymous with increasing the fluidity. The electric furnace gives increased fluidity, which is especially needed where thin section castings are to be poured. Superheated metal increases the effectiveness of the risers by lengthening the period of fluidity, which is their only period of activity as feeders and thus overcomes to a great extent the internal shrinkage that results from contraction.

Speaking before the British Association at Hull, Lord Meston, dealing with the question of Imperial citizenship, expressed the opinion that it was a matter of paramount political necessity that such citizenship should be extended to India at an early date. Lord Meston described India as "the stratum in our Imperial section of the world which was the nearest to our own civilization, traditions and philosophy." A belief prevailed in India, he said, that helotry, and not citizenship, was the status designed for Indians in certain dominions and colonies, but India's part in the war raised the question to another level. Lord Meston agreed that British statesmen had recognized India as a partner in the Imperial federation, but, when Indian politicians tried to translate courtesies into terms of practical citizenship, they were faced with a different interpretation of India's status in certain dominions and colonies. Lord Meston suggested that an impartial tribunal, like the Royal Commission, should be established to deal with such cases.

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The Bengal National Chamber of Commerce have submitted their suggestions to the Bengal Retrenchment Committee. The Chamber says taxation in Bengal has reached its utmost limit. They must have recourse to retrenchment and a cessation of Government loans for ordinary administrative purposes. The case of Bengal is exceptionally bad. The Chamber suggests that the services should be gradually Indianised and the difference between the higher and lower grades of services should be reduced and travelling allowances to officers should be curtailed. With a view to reduce the expenses of a double administration, the Chamber points out that Orissa should be returned to Bengal and Behar should be amalgamated with the United Provinces. There should be two Executive Councillors and Ministers for each Province, with a pay of Rs. 4,000. Divisional Commissionership should be abolished, their work being taken up by the Revenue Board. The Chamber also suggests the reduction in the number of higher grade police officers, the amalgamation of the Industries, Agriculture and Co-operative departments, the abolition of the post of Publicity Officer, reduction of a number of Imperial Service men, as also their general scale of salaries, reduction of officers in the Education Department and the abolition of Guru-training schools

A Canadian Official report suggests that the extensive demand for wooden foot-wear in Japan is worthy of attention by wood-working establishments which have equipment that could be employed in making by machinery what the Japanese have always done by hand labour. The population of Japan proper is about 58,000,000, and each individual in at least 50,000,000 requires an average of six or seven pairs of *geta* a year. It is considered that it would be necessary to make only the wooden part, sending this to large dealers in Japan for completion. Further details and illustrations are given in the *Commercial Intelligence Journal* of the Canadian Department of Trade and Commerce, Ottawa, for August 5.

* * *

Prime Ministers of France when they fall—and they fall embarrassingly often—generally topple with a crash. Witness the case of M. Clemenceau. Usually they fade into obscurity or have to endure ignominy. M. Artistide Briand has chosen the former. From time to time we hear of his rural exploits, but only rarely. He is apparently having much success as a farmer down in Normandy. In one direction he has astounded the professional farmers of the region, who have come to the conclusion that there is something about a politician after all. Close by his cottage at Cocherel, was a piece of abandoned land. Never in the memory of peasant had a sheaf of corn been seen thereon, despite the most diligent efforts at cultivation. M. Briand decided to buy this barren stretch, which was available for a nominal figure. When the villagers heard of it, they all counselled him not to waste his money, the former Premier, in his old coat and older hat, being "hail-fellow, well-met" to every local farmer and cattle-breeder. But the purchase was made. The neighbours shook their heads and declared M. Briand would have done better to remain in politics than fling away his money on this "sheep-walk." But one morning there arrived some complicated instruments which tore up the hard soil. Samples were despatched to chemists, who recommended the use of a special manure. Then the "amateur" sowed seed from Canada. Constant watch was maintained by the friendly neighbours, who were still sceptical, but they had to admit they were wrong when shoots began to come through the earth which had for so long been sterile. When harvest time came it was M. Briand's "sheep-walk" which furnished the best crop in the *arroundisement*.

A number of interesting pieces of English furniture recently presented by Mr. Douglas Eyre have been placed on exhibition in Room 56 of the Woodwork Galleries of the Museum. These pieces of furniture date from the latter part of the 17th century to the middle of the 18th century; they have been handed down in the donor's family and thus have an important documentary interest. They include a winged armchair of about the year 1700 embroidered in coloured wools with David playing the harp before Saul, and other Biblical and mythological subjects; and a large double-back settee with three chairs and a stool of the time of James II. Among examples of the 18th century, the most valuable is a set of mahogany chairs, richly carved with ornament of the middle of the century and the crest of the Eyre family. This gift is of great importance in strengthening the English furniture in the museum at a time when high prices and lack of money make it difficult for a Government institution to compete with wealthy collectors.

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The "International Sugar Journal" records substantial progress with the Nira Vally Sugar Co., floated by Lalubhai Samuldas, of Bombay. Located at Baramati, about 100 miles south-east of Poona, the factory is in the centre of a district where 30,000 acres of irrigated Pundhia cane are grown annually. As only 400 tons of cane per day can be dealt with, there should be no difficulty in obtaining an ample supply of raw material. The factory, which will be ready to operate in December next, is thoroughly up-to-date in its design. It will have a 14-roller mill and quadruple effect evaporator laid out for separation of steam to both heaters and pans. Sulphitation of juice and syrup will be employed, and the latter will be filtered before being sent to the pans. Plant for double curing of the massecuites has been installed, and one grade of white sugar, or first and second and third grade may be turned out at will. A note issued by the Secretary of the Sugar Bureau at Pusa shows that in India there are at present 18 factories refining raw sugar, gur or rab.

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M. Olaf Aschberg, one of the founders of the New Russian Bank of Commerce, established with a capital of 10,000,000 gold roubles, in shares of 100 gold roubles, mostly foreign money, passed through Stockholm on his way to Moscow and informed "Nya Dagligt Allehanda" that he intended to open the bank in the middle of November. It has previously been announced that the bank expected to commence activities in October. Mr. Aschberg stated that his present visit to Russia was for the purpose of concluding the work of organization. The bank is primarily for the support of the import and export trade of Russia and is to guarantee the payment of goods delivered. A branch is to be opened in Berlin, under the leadership of M. E. Grube (formerly chief of the old Russian State Bank in Petrograd). The foreign department of the Bank in Moscow is to be under M. Max May (formerly for many years chief of the foreign department of the New York Guaranty Trust Co.).

* * *

The Committee appointed by the Government of Bombay to report on the technical and industrial education in the Presidency, has submitted its final report consisting of two parts, one signed by the majority composed of the European members of the Committee and other signed by the minority consisting of Sir M. Visvesvaraya, Chairman and the Indian members. The Committee submitted an interim report and on account of fundamental differences of opinion the majority of members have compiled an independent report incorporating therein a portion from the Minority Report with which they were in agreement, the main points of difference between the two reports were under four heads, *viz.*, (1) types of schools or institutions; (2) the number of pupils to be trained and the estimates of costs; (3) organization and agencies for carrying out the scheme and (4) other points of general or minor character. As regards the types of schools the majority hold the view that the best means of giving practical training to young men is by establishing apprentice schools attached to large workshops and factories. The minority think that this type of school is mainly intended for training wage earners in factory or workshop. It is at best a part-time school. A number of factories and workshops in the Presidency being limited, there will not be more than a dozen places where schools of this type could be maintained. There will be no place for full-time day students in such a school. The Majority Report puts the estimate of the number to be trained in apprentice schools 600, but Minority state that to them, it is unthinkable that provision so small for industrial education of lower grades will satisfy the needs of a population of 20,000,000.—*Reuter*.

Books in Brief.

SHORT REVIEWS OF RECENT BOOKS.

Money Credits and Commerce.

By Alfred Marshall, published by Messrs. Macmillan & Co., London and Bombay. Price 10*s.* net.

The name of Dr. Marshall is a magical one in the Economic World. Its very mention inspires respect and deep attention. When thirty years ago, his 'Principles of Economics' appeared, it heralded a new school of economic thought and method. The *Principles* has long been a standard book on Economics in this part of India for the topics covered by it. It has been systematically studied in this country and another book of a similar type has not been available for the main topics included under the head of "Economics." Not long ago, Dr. Marshall issued his *Industry and Trade* and this filled a desideratum. The present volume fills another part of the void still left and if Dr. Marshall realizes the hope—as we hope and trust he will before long—of issuing the fourth volume he has in view, he will have covered practically the whole ground after his own fashion. For Dr. Marshall, in his treatment of economic topics, stands in a class by himself. His writings, erudite and scholarly, have made a deep impression on students and teachers alike in this country as much as elsewhere, in Europe or America. Dr. Marshall has the supreme merit of treating topics in a perfectly scientific spirit, the detachment he brings to bear on his writings being such as to make the subject handled thoroughly critical. The present review, however, is neither the place nor the occasion to go more into Dr. Marshall's method, though much can be written on this head deserving of attention. In the present volume, Dr. Marshall treats of money—its functions, purchasing power, metallic currencies—business credit-including joint-stockcapital, British banking and its development and stock exchanges—international trade,—its characteristics, internal exchanges, taxes on particular imports and exports, incidence of taxes on imports and exports, import duties for protecting domestic industries and fluctuations of industry, trade and credit. These are various appendices to the work in which various topics incidentally referred to are dealt with in particular detail. The graphical presentation of problems, so well known to readers of Dr. Marshall, is, as may be expected, to be found in this work as well. They relate mostly to problems of international trade. This work is the result of the ripe knowledge and study of Dr Marshall written in a manner at once simple and taking. The volume is bound to have a large reading public in this country. The universities in India cannot do better than take note of the work and prescribe it for the use of students seeking the higher degrees in Economics In concluding this rather sketchy and all too brief note on Dr. Marshall's great work, we would invite attention to what he says here and there in it about India. He has some interesting remarks on what he terms India's import of "a good many able young men," who "do not enter in India's list of imports." It is claimed, he says, that they render to her services whose value exceeds that of her total payments to them. When they return to England, "they are," he says, "unreckoned exports from England." Their incomes return to England as "material goods which enter into her imports." "On the other hand," he adds, "India counts these material goods among her exports to England, but of course she makes no entry among her imports for the expensive young men who have been sent to her." In another place Dr. Marshall deplores that India has not followed Japan's example of eagerly adopting "western methods" in trade and commerce. His words in this connection deserve to be quoted here :—"Here cotton manufactures are indeed mainly in the hands of her own people. But her large exports of tea and jute owe much to western enterprise ; and in spite of the denseness of her population, nearly all the remainder are raw products raised without little aid from advanced appliances. Railway material holds a considerable place among her imports ; but their chief characteristic is the predominance of European luxuries for the consumption of her ruling classes, native and European. A good many of the things, which she is importing in increasing quantities, could, however, be made easily by her own people, if they aroused themselves. She pays for them largely

by the exportation of cotton, jute and tea; and the recent development of these three industries has been a chief cause of that reduction in the real cost to her of her increased demand for European goods."

More than once Dr. Marshall refers to his evidence given before the Indian Currency Committee, 1899. In one place he says that before the recent great war, Britain's business was firmly based on gold and though she used relatively little gold for the purpose, she easily adjusted the basis of currency to changing conditions. Her position in the matter was in sharp contrast to that of India. "The importance of this contrast", he adds, "is apt to be under-rated." He then gives an extract from an argument submitted by him to the Commission which suggested the reasons for the opinion that England's monetary system does not afford a good pattern for the moulding of Indian currency. This is too long to quote here. But it ought to suffice if we say that his reasons are incontrovertible in principle and unanswerable in argument. He suggested to the Committee that the constitution of the German Reichsbank is adapted for translation in India.

In an appendix (G), Dr. Marshall discusses the interesting topic of trade under dissimilar currencies. So far as India is concerned, this is, perhaps, one of the best parts of the present work. Though the note is based largely on the evidence given by him before the Committee referred to already, it does not lose its value any the less at the present time. The note should, we think, be read as a whole. We will, however, allow ourselves the privilege of quoting its concluding para :—"These difficulties (those connected with the rise or fall of the rate of exchange between London and India) are in themselves considerable, but the main importance of most of them arises from their bearing on the central difficulty of the position of the Indian Government, which is not directly connected with either the rupee or sovereign, and remain if the whole world had the same currency. This difficulty is that the immense increase in the wealth and prosperity of the western world, which began in the second period of last century, and has gone on at an ever-increasing pace since then, has made the resources at the command of the western Governments beyond all comparison greater than any known before. These resources are spent on civil Government and on military preparations. The administration of law, education and sanitation are more thorough and more costly in terms of labour, and far more costly in terms of commodities than they were. Military expenditure has grown perhaps even faster."

Ranking and Currency.

By W. J. Weston, M.A., B.Sc. (Lond.), Head of the Department of Commerce, The Polytechnic, London, published by W. B. Clive for the University Tutorial Press, Ltd., High Street, New Oxford Street, London, W.C., 5*sh.* 6*d.* net.

This is a suitable text-book on the subject to which it relates. Though primarily written for students, it ought to be helpful to general readers as well. The book is thoroughly up-to-date in character with chapters on recent developments in English Banking, Foreign Exchange, etc. The appendices include one on "Other Systems of Banking," "Legal Tender", "Indian Currency Problem," "Long Term Loans," "Banking and the Genoa Conference (1922)," "International Co-operation among the Banks," etc. Altogether the book is an excellent one, being written in a simple and readable style and devoid of all technicalities.

The Transactions of the Indian Economic Association, Madras Section, for 1921-22.

Published by the Executive Committee of the Association, printed at the Diocesan Press, Vepery, Madras. Price Re. 1.

Among the papers included in these *Transactions* are the following :—"Taxation of Land" by E. V. Sundara Reddi; "A Plea for Guld Currency in India" by T. J. Ramaswami; "The Economics of the Joint Family System" by S. Jagadisha Iyer; "Labour Movement in Madras" by P. S. Loganathan; "Economic Life in Rural Malabar" by S. Subramania Iyer and "Early Land Revenue History of Madras" by C. S Srinivasachari. It is not necessary to go into each of these papers here for the very obvious reason that it would take too much space to critically examine the conclusions arrived at by each of the writers. Suffice it to say that the papers indicate a genuine attempt at the study of the problem tackled. We would, however, hazard a suggestion or two. In tracing the history of "Taxation of Land" for instance, we would like the writer to go into it from a historical point of view and study the systems evolved in South India from one period to another. This *method* of study would yield better results. An economic topic should not, if possible, be treated as a

topic of polemics or politics of the current day. Similarly, in the case of Land Revenue History of Madras, we would stress the historical aspect a great deal more than the merely political side of it. We have no desire to decry the work of the writers we have quoted above. This deserves praise for they have made laudable attempts in new lines of economic study.

Kanarese Literature.

By E. P. Rice, B.A., published by the Association Press, 5, Russell Street, Calcutta. Price Rs. 2.

This is a revised edition of the author's work published in the well-known and popular "Heritage of India Series." We have carefully examined the work and feel bound to say that it is both accurate and comprehensive. Mr. Rice deserves high praise for the handy volume he has produced. Kanarese literature has a literature second to none in South India. Writers like Mr. Rice, whose connection with Mysore extends to nearly a century, if not more, show the love they bear to their adopted country by the steady and scholarly work they do for it. We have no doubt that further and more frequent editions of this book will be called for by the Kanarese-knowing people of this country.

Cotton Facts, 1922 Edition.

Published by Messrs. Shepperson Pub. Co., Inc., 82, Beaver St., N. Y. City.

The 47th annual edition of the well-known reference book of the cotton world, Cotton facts, containing many new tables and valuable features, has been just issued by Messrs. Shepperson Pub. Co. The statisticians of the New York Cotton Exchange have revised and corrected the tables covering weekly receipts, exports, stocks, etc., for several years back, and all other tables throughout the book have been, we note, brought up-to-date. The present edition has been greatly augmented in value by the addition of several new tables such as, World' Consumption, Production and Supplies, Probable World's Stocks, Recapitulation of World's Cotton Exports for 100 years, etc. An interesting feature of Cotton Facts in recent years has been the chart showing the fluctuations of prices of spot cotton at New York and Liverpool. This year the course of the New Orleans market has been added, making the chart more valuable than ever, especially as it is brought to December 1st in this year's Cotton Facts. We should be glad to hear of the increasing circulation of this handy and eminently accurate book in cotton circles in India. India is fast becoming a great cotton producing country and the need for a full knowledge of facts relating to cotton generally is highly necessary.

International Year Book of Agricultural Legislation, 1922.

Volume in 8vo. of about 1,200 pages ; price 12/- or $3, post free. Published by the International Institute of Agriculture, Rome.

The following from the preface fully explains the contents of this valuable Annual :—

"The characteristic features distinguishing agricultural legislation in the several countries during 1919 and 1920 are distinctly maintained and to some extent become more marked in the course of 1921. Almost everywhere war legislation falls into abeyance, and legislative assemblies and governments once more discuss and settle on a normal basis the grave economic, social and technical problems affecting agriculture. But the social question, especially in certain countries, is to the fore, and its importance is evidenced by a whole series of measures on land tenure, farm leases, social insurances and credit.

The ever-growing recognition and appreciation of the value of agricultural and trade statistics has led to several important legislative measures, some of which (Japan, Straits Settlements) aim at reorganizing these services on a new basis taking into account the results of acquired experience ; others (Switzerland, Uruguay) provide for and regulate the census of farm product and live-stock.

In the matter of food supplies and the trade in cereals there is a notable tendency to return to a regime of complete freedom, the various restrictive measures taken during the war and the transition period are abrogated and the special organs formed for carrying out exceptional measures are liquidated ; laws and decrees to this effect have been enacted in Denmark, France, Italy and Poland. We must mention exceptional measures contained in a German decree regulating conditions in the cereal trade, and a Japanese law which places the rice trade under government control.

Several laws have been passed in various countries to stimulate farming activities and to regulate various crops and plantations. Some of these measures tend to restrict certain crops with a view to increasing the production of others (the restriction of cotton

plantations in Egypt with a view to increasing the cultivation of cereals). Others aim at stimulating the general activities of farmers either by forming special bodies to guide and promote the cultivation of the soil (Ontario), or by granting customs and fiscal facilitations to encourage the importation of agricultural machinery (Roumania). Again others seek to regulate the production of certain crops by granting bonuses or awards to promote or develop their cultivation, while laying down the technical conditions which should be observed. Under this head we would mention the measures taken in Belgian Congo for the cultivation of cotton, in France for the cultivation of cereals, in Queensland for the cultivation of bananas, in Italy for fruit-growing, in Korea for tobacco and in Portugal for wines.

The regulation of water courses and forestry has also claimed the close attention of parliaments and governments. With reference to the former we must point to laws enacted in Bulgaria and Roumania which regulate the concession of national watercourses especially with a view to agricultural requirements and the formation of hydraulic consortiums; with reference to forestry, laws have been passed in Bavaria and Ontario favouring reafforestation, in Belgium and Switzerland restricting the right to fell down trees in woods, in Greece and the Netherlands regulating the management of national forests.

The urgent and grave problems of agricultural co-operation, insurance and credit have also given rise to many important measures. Let us mention the laws enacted in the state of Texas and in Poland on co-operative associations, in Roumania on professional syndicates, in Belgium on freedom of association, in Alberta on municipal hail insurance, in Italy extending the benefit of the workmen's compensation act to farm workers, in Poland on fire insurance, in Columbia on agricultural pledges, in the United States, France, Poland, Alberta, South Africa, Greece, Italy and Uruguay on agricultural and land credit.

Governments have devoted special attention in 1921 to the several problems connected with rural holdings and land reforms. We will mention the measures passed in Denmark and France on small holdings; in Bavaria and Prussia on restriping, and the Danish law to avoid excessive subdivision of landed property. Many laws have been enacted on land tenure reform; among others the Austrian law on the right to repurchase farm lands held on lease; and on the expropriation and assignment in allotments of certain classes of land; land reform measures have also been enacted in Bulgaria, Greece, Lithuania, Latvia, Portugal, Poland, and Roumania. No less attention has been paid by parliaments and governments to the question of farm leases and the relations between capital and labour in agriculture as is shown by laws and decrees passed in Argentina, Egypt, Italy and Roumania."

The Annual deserves to be in every public Library and Government Office in India.

Wireless in India.

The Government of India have issued a statement on their scheme for the development of wireless communieations in India. Though the scheme does not cover wireless communications with Britain and other parts of the world, the policy outlined is such as to fit in eventually with the scheme of Imperial wireless approved by the British Government.

The Government of India under their scheme will have the exclusive privilege of erecting, maintaining, and working wireless telegraphs in British India, and will exercise the right by maintaining stations open for public traffic and by granting licenses to private bodies to erect and work wireless telegraphs in British India and in ships and aeroplanes registered therein. Besides a number of portable and semi-fixed stations of small power and the stations on the Sandheads pilot vessels, the Government of India will maintain several permanent coasting stations communicating with ships at sea, comprising Bombay, Calcutta, Diamond Island, Karachi, Madras, Port Blair, Rangoon and Victoria point. The inland stations are Allahabad, Delhi, Lahore, Maymyo, Mhow, Nagpur, Peshawar, Quetta, Secunderabad, Patna and Poona. Half the business of coast stations is at present occupied by inland station messages at the large ports and important cities. It is, therefore, essential to relieve them by separate stations, and the plan is to provide separate inland and coast stations at Rangoon, Bombay, Calcutta, Madras and Karachi.

An attractive enterprise, in which the co-operation of the public is now invited by the offer of shares, is that of the Eastern Metal Company, Limited, a company registered in Bombay for the purpose of manufacturing and marketing in India of a new metal known as Golkonda. It is claimed that this metal for the manufacture and sale of which the Eastern Metal Company has secured exclusive rights in India and the Far East, is in every essential feature (except intrinsic value) a practical and perfect substitute for gold and gold plate. It provides gold colour without the expense of gilding and a number of manufacturing jewellers and others in the United Kingdom have testified to the fact that it is a most satisfactory metal to work being easily chased and engraved, keeps its colour, polishes and wears equal to gold, and is adapted for manufacturing a very extensive range of articles. Golkonda metal is the result of long experiment and research and is composed of materials which amalgamate readily and uniformly. At the same time it is claimed that it can be manufactured cheaply so that it should compete profitably with brass and the cheaper alloys. It has been shown and received favourably in markets in India where, in the form of plates, trays, bowls, mugs, cutlery, etc., it is expected largely to replace the brass and copper pots now in use in every Indian home. The company intends to build a factory to manufacture the metal and articles from it in the State of H. E. H. the Nizam of Hyderabad, where labour and production costs are favourable.

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Co-operation in Mysore, 1920-21.

By "Rusticus".

The circumstances which delayed our review of the Report of the Mysore Agricultural Department for 1920–21 have also delayed our comments on the work of the Co-operative Department for that year. None the less, although Mr. Ranga Rao's Report is now rather ancient history, a brief notice of it is called for in these columns, not only because any report which deals with any branch of economic activity in the Mysore State obviously demands a prominent place in them, but also because the results of the work of the Department in 1921–22 should shortly be available as should also the Report of the very strong Co-operative Committee which, during the year, examined the progress of the movement in the State. Even those of our readers who have seen the Report under review may, therefore, not be averse from having the salient facts of it recalled to their memory.

We have described the Co-operative Committee as a very strong one. A Committee which included amongst its members Mr. Lalubhai Samuldas, that veteran co-operator, now one of the greatest authorities on the subject in India, Mr. Devadhar, who has done such sterling work in connexion with the societies started by the Servants of India in Bombay, Mr. M. Shama Rao, the first Registrar of Co-operative Societies in Mysore, and the present Registrar could not be described otherwise. Much water has flown under the bridges since the Co-operative Committee appointed by the Government of India issued its Report in 1915 and it was very natural that the Mysore Government should desire the investigation of developments since that date. We have no doubt whatever that the Report of the Committee will be a most valuable one and that co-operators all over India will derive instruction and profit from studying its recommendations.

As the Committee's investigations were in progress, it was wisely decided to make 1920–21 a year of consolidation rather than of expansion for the co-operative movement in Mysore. The statistics, therefore, show only a small increase in the number of societies from 1402 to 1500, a practically stationary working capital of just over Rs. 78 lakhs, a decrease in the total transactions from Rs. 326 to Rs. 278 lakhs, a satisfactory increase in the total net profits from Rs. 3.67 to Rs. 3.9 lakhs and a still more satisfactory increase in the reserve fund from Rs. 5.79 to Rs. 6.93 lakhs. The decline in membership is evidently more apparent than real for there is clearly something wrong about the figures for the Chitaldrug District which showed a decline from 10,715 to 6,674. The registration of only one society in the district was cancelled during the year so that either the figures for the year under review or for the previous year must be incorrect. The fall in the value of the total transactions is quite adequately accounted for by the fact that it was fortunately no longer necessary for Co-operative Societies to undertake the purchase and sale of rice on account of the scarcity of food grains in the State.

The figures for collections, to which, as our readers know, we attach very great importance, can only be regarded as fairly good. The percentage of collections to the total demand fell from 83 to 77.2, not a bad percentage it is true but not as good as it should have been. Mr. Ranga Rao does not explain the reason for the fall but is alive to the necessity for improvement. A circular has been issued to all societies exhorting their Management Committees to be more careful in giving loans and more active in collecting their dues. So far the Committees appear to have paid more attention to the latter instruction than to the former as the immediate result has been an

increase in the number of suits. No less than 2078 of these were filed during the year, the claims involved amounting to nearly Rs. 3½ lakhs. At the end of the year, 1763 claims were still pending disposal whilst of the decrees sent to the Revenue Department, 1848 remained unexecuted. It would appear advisable to place officers on special duty to clear off the arrears in both case. In connexion with the grant of loans, it is worthy of mention that the members of Co-operative Societies in Southern India are in a much more favourable position in regard to the rate of interest charged than are their fellows in Northern India. Owing to the financial stringency, the rate of interest charged by societies in Mysore to their members was raised in 1920–21 from 10 to 10½ per cent. There is still a very wide margin between this and the 15⅝ per cent charged by societies in Bihar and Orissa.

One of the best tests of co-operative progress is the purposes to which loans are applied. It is evident that, if co-operation is, as it should, enabling the members of societies to disentangle themselves from the shackles of old debts, they are able, more and more, to apply their loans to productive purposes. Co-operation in Mysore passes this test with honours. In 1920–21, the percentage of loans used for productive purposes rose from 63 to 68.4, whilst the percentage used for paying off prior debts fell from 32.3 to 28.3. The percentage of loans used for non-productive purposes fell from 4.7 to 4.3.

There is very little in the Report in regard to the actual working of societies which calls for comment. Mr. Ranga Rao considers the transactions of the stores societies during the year very satisfactory. The figures he gives bear him out as regards quantity but we should have liked more information as regards quality, of which the profits realized, which are not mentioned, would have afforded some evidence. There were 75 stores societies in Mysore at the end of the year and it would have been interesting to know how far the defects in the organization of this class of society such as lack of business experience in the management, lack of loyalty on the part of individual members, too much interference by the directors and so on, have been found in Mysore. Mr. Ranga Rao mentions that the relations between his Department and the Department of Agriculture were close and cordial and to those who like ourselves hold that the closest touch between them is essential to the progress of the country side, it is pleasant to find that Dr. Coleman, the Director of Agriculture, was a member of the Co-operative Committee. High prices of manures and implements greatly hampered the agricultural activities of co-operative societies but they did good work in distributing the seed of the H 22 variety of ragi which has been evolved by the Agricultural Department, and in fact, have made so much progress in spreading it through the State that the direct indents on the Agricultural Department for it are now small. The development of industrial co-operation in Mysore is making but slow progress except as regards the weavers' societies of which there were 45 at the end of the year. These made a profit of Rs. 17,800 on their transactions, a distinctly encouraging result in view of the difficulties inherent in this class of work. The Sericultural Societies have so far proved a failure. Only one did any work and that incurred a loss. Mr. Ranga Rao is frankly very disappointed over this as he looks on sericulture as one of the most important industries in the State and considers it in need of all the help co-operation can give. The Co-operative Committee may be able to suggest ways in which it can be assisted. The jaggery societies are being wound up and the Chennarayapatna rice-milling society is in imminent danger of sharing the same fate owing mainly to an extraordinary omission for which, apparently, the Department of Industries was responsible. It was completely overlooked that firewood was scarce in Chennarayapatna and that the cost of running a steam engine would consequently be very high. It is now suggested that an oil engine should be substituted for the steam engine but the mistake has not unnaturally damped the enthusiasm of the members of the society who have taken to quarrelling amongst themselves. It is to be hoped that both the Co-operative Department and the Department of Industries will learn from this experience the necessity for the closest attention to detail before starting a new enterprise. It is in this respect above all others that unfavourable comparisons are so apt to be made between the Government Department and the business firm and, indeed, it is difficult to imagine a mistake of this character being made by the latter.

Directly or indirectly, co-operative societies contributed about Rs. 7½ lakhs to the Mysore State Loan of 1920, a contribution on which both they and the State are to be congratulated.

Trade and Employment.*

By the Right Hon. R. McKenna.

Our commerce is distinguished from that of any other country by its large proportion of foreign trade, which, it is safe to say, before the War absorbed one-third of the labour of our people, whether in production, transport or clerical work. Although the proportion may be somewhat less to-day, this trade is still of vital importance to us. It is indeed a commonplace that under our existing organization we cannot keep our industries in full employment unless we sell a very considerable part of our production in foreign markets. In the modern world this is true to some extent of every country, but with us foreign trade has such exceptional importance that anything which restricts it must deeply affect our national prosperity.

The Breakdown in Europe.

If we begin by comparing our present foreign trade with that of the last pre-War year we find that the values of imports and exports for the twelve months ending September 1922, the latest date for which we have the figures in detail, show a considerable increase over those of 1913. But if we are to have a true standard of comparison we must make proper allowance for the reduced value of money, and in the few figures I shall quote I have taken the values of 1922 on the basis of commodity prices current in 1913. On this basis retained imports show a decline of 19 per cent and exports of British production of 34 per cent. Let us now look a little more closely at the drop in our exports and examine where our foreign market has been curtailed. Dividing the countries which take our goods into three main categories, in the first we have the countries of Central and Eastern Europe, our exports to which have declined 62 per cent. The second group includes all other foreign countries, which took 30 per cent less of our products in 1922 than in 1913; and the third group consists of the British Empire overseas, to which our exports fell 29 per cent.

In the existing state of Europe we may feel little surprise at the great decline of our trade with the Central and Eastern European countries; but the remarkable falling off in our exports to other foreign countries and to British possessions does not admit of so obvious an explanation. It is indeed sometimes urged that until Europe is restored we should look to a development of our Imperial trade in order to make good our losses in the European markets. But it appears that though our Imperial trade has suffered less than our foreign trade, it has still been gravely impaired, and so far from reducing our loss has itself contributed to it. A very brief study of the general course of foreign trade will show that whatever injuries it in one part of the world has its reaction elsewhere, and that any confident hopes, based on the comparatively small proportion of our pre-War exports to stricken Europe, are not well founded. We shall find that the commercial breakdown in Central and Eastern Europe is not only destructive of our markets there but must hamper our export trade more or less all the world over.

Interdependence of Nations in Trade.

Let us consider for instance the trade which this country carried on with its two largest customers, India and Germany, in the year 1913. We sold to India goods of the value of £70 millions and we received from her goods valued at £36 millions. According to the current phrase, in our dealings with India we had a favourable balance of £34 millions. In the same year our exports to Germany were valued at £41 millions and our imports from that country at £76 millions. Here we had an unfavourable balance of £35 millions. If for the purpose of foreign trade we were to take India and Germany together as one group, then in dealing with this group our imports and exports in 1913 almost balanced. It was only an accident that there was this close approximation, but we were certain to find some approach towards equality. Looking at the figures of trade between India and Germany in that year we see that India's exports to Germany were £27 millions and her imports from that country only £7 millions. India had an excess of exports to Germany of £20 millions, and the surplus she thus obtained provided her with the means of paying for British goods.

I have given here a very simple illustration of triangular trade, but if we follow our external trade through its whole course we shall

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* Part of speech delivered by the Right Hon. R. McKenna, Chairman of the London Joint City Midland Bank Limited, at the Ordinary General Meeting of Shareholders held on January 24, 1923.

find everywhere the same conditions of interdependence between nations. We suffer a real and very severe loss by the breakdown in Europe, and I am afraid some of the arguments which have been used to minimise it have little solid foundation. It has been said for instance that the figures of our exports of manufactured goods in 1913 show that the proportion of this class of commodity taken by the European countries now in an unsettled condition was even smaller than the proportion they took of our exports of all kinds, and it is argued that as our industry benefits most from our export of manufactured goods, it will be comparatively easy by an extension of our Imperial and South American markets, where our manufactures have been readily imported, to make good the loss we now suffer from the condition of Europe. But this view of our trade leaves a very important consideration out of sight. To what extent should we have to lend the money to our Imperial and South American customers to enable them to pay for our manufactures? If we lent more, we should sell more. But we cannot conduct our export trade entirely on this basis; in large part at any rate our exports are needed to furnish us with the means of paying for our imports. We did not lend much to Europe before the War and our exports to that Continent cannot be replaced by exports which represent the proceeds of our own loans.

Development of Domestic Trade.

The restoration of the European market is indeed of the greatest importance to us, but the condition of Europe is due to causes which in the main are beyond our present control. Wise policy on our part may, and I believe in course of time will, have an ameliorative effect, but it is not in our power to enforce such conditions as are indispensable to the recovery of general European prosperity. When however we turn to our home trade we find ourselves masters in our own house. Here we are more fortunate in the fact that the fundamental conditions are not unfavourable. The relations between capital and labour are on a far better footing than they were two or three years ago. Post-War illusions have been dispelled and there is a general disposition to face realities. The public have a wider recognition of the necessity for national economy, of the crushing effect of excessive taxation on industry, and of the need for greater production. In these circumstances it is not merely possible for us to get back to the pre-War level but we may perhaps look for a further development of our domestic trade so as to make up for part of the foreign decline. It is in this sphere that our best hope lies and it is here that we may find a wise direction of financial policy of the greatest avail.

Restrictive Influence of Deflation.

In speaking of financial policy let me say at once that I am not referring to that expressed in the annual Budget. The policy I am discussing now has nothing to do with the imposition or remission of taxes. It deals with such questions as the issue and rate of Treasury Bills, the funding of floating debt, the issue of Treasury Bonds and other kindred matters. In recent years this policy has been frankly one of gradual deflation. Its responsible authors have defended it upon what they deem grounds of sound Treasury finance, and the opinions which have guided them deserve the greatest respect. If there were no other considerations to bear in mind, if under existing conditions the ends aimed at could in fact be achieved, if all we had to suffer from the medicine administered to us was a temporary inconvenience, we might perhaps accept the policy without complaint. But we cannot leave its influence upon trade and employment out of sight. Though not obvious and immediate it is none the less certain, and if we are to form a sound judgment upon this policy as a whole we must view it in its full consequences.

In discussing the question of deflation I feel that I must begin with an apology. We are all familiar with the phenomenon of great trade activity arising from a speculative boom and we have all been taught to understand its fleeting and illusory nature. We realize that great social evils spring from the soaring prices which accompany it; we know that the inevitable reaction sweeps away the swollen profits as rapidly as they were made; we recognize the intimate connection between speculative excitement and credit inflation; and we justly condemn any financial policy which has an inflationary effect. But when we turn our attention to the influence of deflation upon trade and employment we have no familiar body of accepted opinion to guide us. People are apt indeed to start with a preconceived idea that deflation must be meritorious since it is the reverse of inflation, and that, even though it be injurious to trade, we may find consolation in its superior virtue. Deflation however as a financial policy has no more to recommend it than inflation, the truth being that what we need to ensure healthy

and prosperous trade conditions is stability in the value of money. My apology is due to you because any discussion of deflation cannot fail to be highly technical, and I am obliged in consequence to ask you for an exceptional degree of patience in listening to me.

Effect on Purchasing Power.

It is necessary for me in the first place to call your attention to certain figures. At the close of 1921 the total deposits in British and Irish banks were £2,530 millions and the estimated currency in the hands of the public was £370 millions. If we add together these figures we arrive at the purchasing power of the public, a total of £2,900 millions. At the close of last year the estimated deposits stood at £2,350 millions, the estimated currency in the hands of the public at £350 millions, and purchasing power at £2,700 millions, a reduction in purchasing power in the course of the year of just over £200 millions.

Any decline in bank deposits, which stand as liabilities in the balance sheet, must be set off on the other side by a reduction of assets. What changes have there been in the assets of the banks in the course of the year? The figures for all British and Irish banks are not yet available; but I can give them for the London Clearing Banks, and these will suffice for the present purpose. There has been a very large reduction in bills, which have dropped by no less than £130 millions. Cash and money at call are lower by £25 millions, and loans and advances are down by £30 millions; but on the other hand investments have increased by £50 millions. An examination of these figures shows us that the fall in deposits, which in the case of the Clearing Banks was £135 millions, has been due to the great reduction in bills, and in particular in Treasury Bills. In the course of the year the Government paid off Treasury Bills to an amount of over £300 millions, of which the banks held between £100 and £200 millions. Here we see a decline in deposits related to a reduction in the Treasury Bills held by the banks. The operation was in truth a measure of deflation effected in pursuance of a declared policy and resulting in a total reduced purchasing power of £200 millions.

Effect on Trade and Employment.

Now what is the effect of a decline in purchasing power upon trade and employment?

To answer this question we must bear in mind the relation between purchasing power and the price level of commodities. Price varies with three factors—amount of purchasing power, amount of purchasable commodities, and the rate at which the purchasing power is exercised, which we may call velocity of expenditure. If purchasing power declines, then until there is a change in the amount of purchasable commodities or in the velocity of expenditure, prices will fall. But when prices begin to fall, manufacturers and traders who have bought raw materials and stock at the higher level are faced with a loss and are compelled to restrict their operations. Fewer orders are given, trade declines and unemployment grows. Thus the immediate effect of a reduced purchasing power is diminished trade and increased unemployment. If at this stage we made no further effort to deflate, trade would soon recover. With a diminished production, purchasable commodities would be reduced in amount; at the lower prices the velocity of expenditure would tend to accelerate; and trade would become active again. But if, whenever there are signs of trade recovery, a fresh dose of deflation is administered, we may prolong the depression for an indefinite period.

The Burden of the National Debt.

I have shown here as briefly as I can the direct relation between a policy of deflation and trade depression. With regard to the trade depression from which we are now suffering I know it is contended that, painful as the consequences may be, we are really only going through a period of unavoidable lassitude after the fever of the preceding years, and that we shall emerge from it in a far healthier condition with prices definitely established on a lower level. I cannot help thinking however that this is a mistaken view of the possible results of deflation. It leaves out of account the budgetary difficulties which must confront the Chancellor of the Exchequer. A drop in prices leads to a decline in profits and consequently in national revenue. It will be readily appreciated that if prices were to go back to the pre-War level no Chancellor could balance his budget. An examination of the figures will show this at once. The charge in respect of our National Debt last year amounted to £332 millions and income-tax at a rate of 5s. in the £, together with the proceeds of super-tax, raised sufficient revenue to meet the whole of it. But if we get back to the 1913 prices and value of money, we shall get back also to the 1913 national income and yield of Income-tax, on which basis a rate of over 8s. in the £ would be

required to meet the annual charge for debt alone. Lower prices increase the real burden of the fixed charges on the national revenue, which in interest on Debt and war pensions amount to £425 millions this year. If last year's policy of deflation is continued we may find ourselves within measurable distance of being forced into the opposite and dangerous policy of inflation by the inability of the Chancellor of the Exchequer to meet his expenditure without having recourse to borrowing.

Deflationary Policy Reviewed.

In speaking two years ago on financial policy in relation to trade I felt justified in saying that any attempt to carry through a policy of deflation could only end in the strangulation of business and widespread unemployment. At that time such a policy had already received public official sanction. The Bank rate which had been raised to 7 per cent in 1920 remained at that level for a year, and Treasury Bills continued on tap at 6½ per cent during almost the whole period. Already by the autumn of 1920 trade showed such a serious decline that we might have expected a lower Bank and Treasury Bill rate, but the exigencies of deflationary policy demanded a continuance of dear money. Unhappily employment decreased month by month as this policy was enforced. In April 1920 the records of the Employment Exchanges showed that we had 348,000 unemployed; by March 1921 the total of unemployed had risen to 1,506,000.

The deflationary policy pursued in 1922, though far less obvious and far less drastic in its methods than that of 1920 and 1921, was bound to be not less certain in its results. No one has any difficulty in understanding that a high Bank and Treasury Bill rate, maintained for a very long period, cannot fail to depress trade; but the task of relating cause and effect is very much harder in the case of the more modest deflationary effort of last year, which consisted in the weekly offer of Treasury Bonds. It must indeed appear almost fantastic to allege that the conversion of a Treasury Bill into a Treasury Bond may have an adverse influence upon employment. And yet if we direct our attention to the actual course of events I believe we shall find the argument to be well founded.

Let us go back to July 1921 when the Treasury Bills outstanding were over £1,200 millions and the first issue of 5½ per cent Treasury Bonds was made. At that time Treasury Bills were largely held by the public as well as by the Government departments, the banks and the money market. In the course of the ensuing nine months the Treasury Bill rate fell from about 5 per cent to less than 2½ per cent; most of the Treasury Bills held by the public were allowed to run off, and the proceeds were invested in gilt-edged securities carrying a higher rate of interest. We all remember the consequent great rise which took place in those securities. The Government found the means to pay off the Treasury Bills partly by the sale of Treasury Bonds and partly out of the surplus of revenue over expenditure. By April 1922 over £400 millions of Treasury Bills had been repaid, and nearly £400 millions of Treasury Bonds had been sold. In effect what had happened was that the public had changed their investments from one form of Government security to another. There had been some payment off of Treasury Bills held by the banks, which had used the money to buy the very remunerative Treasury Bonds, but the action of the public was the mainspring of the movement.

We come next to a time when the public had ceased to hold any notable amount of Treasury Bills which were then almost all, as they are to-day, in the hands of the public departments and the banks or money market. The problem which now confronts us is, what happens if the Government continue to offer Treasury Bonds for the purpose of obtaining funds with which to pay off Treasury Bills held by the banks? We shall deal with the problem more easily if we consider it in relation to a particular case.

Sale of Treasury Bonds to Public.

Let us suppose that a member of the public, who has £10,000 on deposit in his bank ready for investment, applies for that amount of Treasury Bonds. He will draw off his deposit of £10,000 and pay the money into the Bank of England to the credit of the Government. In his own bank the accounts will now show £10,000 less on deposit and £10,000 less cash. Next suppose the Government use this money to pay off a Treasury Bill and that the Bill is held by the same bank. Clearly the bank's accounts will then show £10,000 increase in cash and £10,000 reduction in bills. If now we put the two transactions together the final result of the double operation will be, first, that the bank's deposits and bills will each be reduced by £10,000, and, secondly, that the Government will owe £10,000 on a Treasury Bond instead of £10,000 on a Treasury Bill.

To the uninitiated it must look as if deposits, and therefore purchasing power, to the amount of £10,000 had been spirited out of existence, but there is no mystery about the proceeding. I have already called your attention to the published figures of the banks, which show a reduction of many millions last year both in deposits and in bills, and we have here a sufficient explanation of the reduced deposits. It is merely an illustration of the axiom that every bank loan creates a deposit and every repayment of a bank loan destroys one.

Some one may intervene here with an objection which must be answered. In the example I have given the bank would have less deposits than before but the same amount of cash. It might therefore be objected that the bank would have more than its usual proportion of cash and would be in a position to make fresh loans and so re-create its lost deposits. In reply let me remind you that in actual practice the immediate use made by a bank of its surplus cash is to lend it to the money market. With additional resources available the discount brokers and other customers of the Bank of England are able to pay off loans borrowed from that Bank, and every such repayment not only cancels a deposit but also cancels an equal amount of bank cash. Thus, just as when inflation is in process, loans by banks lead to an increase of borrowing from the Bank of England and an increase of bank cash, so when deflation is in action loans from the Bank of England are paid off and bank cash is reduced.

Returning to the subject of Treasury Bonds we will next consider what would happen if no offer were made of them to the public. In that case the intending investor of £10,000 would be obliged to find some other use for his money. He might apply for some new issue of debentures or shares, or he might purchase some existing security, whether a Government or an industrial issue. It is unnecessary to enumerate all the possible forms of investment, but it will be observed that in every case the investor's money would merely change hands. It would pass into the possession of the vendor of the security, who would pay the money into his bank, and there would be no reduction in bank deposits unless it were used to pay off a bank loan. Purchasing power would not be diminished; there would be no less demand for commodities and no fewer orders would be given.

Contradictory Policies.

It is obvious that the first movement in trade comes from giving an order. Trade is set going by the expenditure of money, whether it be on goods for immediate consumption or on goods which are to be used in further production, such as plant and machinery. The argument in justification of the Trade Facilities Act, that by its assistance traders can do business which would otherwise have been beyond their present capacity, is a recognition of the need, when we are suffering gravely from unemployment, to do what we can to promote the giving of orders. But, as we have seen, the issue of Treasury Bonds to pay off Treasury Bills held by banks reduces purchasing power and tends to restrict orders. Thus in the course of last year two diametrically opposed policies have been pursued at the same time. In one case the paramount necessity to give a fillip to trade was recognized and Government credit was used for the purpose; in the other the public were invited to invest their savings in a way which deprives trade of its natural stimulus. We know the defence of the first policy, the need to absorb our vast numbers of unemployed; it remains for me to state the argument advanced in defence of the second.

Divergence between American and British Policy.

The primary ground on which a policy of gradual deflation is recommended is that it raises the exchange value of the pound sterling in relation to the dollar and hastens our return to the gold standard. As every measure of deflation tends to lower prices or, in other words, tends to increase the value of the pound sterling in terms of goods, it must raise the value of our currency in the foreign exchange market. The only exception would arise if other countries pursued the same policy, in which case there would be a fall in prices measured in all currencies. We had a partial illustration of this process in 1920 and 1921 when the United States adopted deflationary methods in concert with our own financial authorities. There were considerable fluctuations in the dollar rate during this period, but in April 1920, when our Bank Rate was raised to 7 per cent, the dollar stood at 3.88, and eighteen months later, after America had broken adrift from this policy, the exchange was nearly the same. Since the late summer of 1921, when British and American policy diverged, bank deposits in the United States have materially increased, prices have gradually risen and the unemployed, who were then numbered by millions, have been steadily

absorbed. During the same period the dollar has depreciated in relation to sterling more or less continuously, until to-day the two currencies stand to each other in a relation not far removed from parity.

DEFLATION AND THE £ STERLING.

It is admitted then that deflation in this country tends to improve the value of sterling. But does it in the actual circumstances of to-day do more than accelerate our approach to parity? Would our exchange not rise to par even if there were no deflationary efforts on our part and we were spared all the evils of trade depression and unemployment which attend such efforts? I think it would, unless financial policy were again reversed in America. I think that in existing conditions the depreciation of the dollar is bound to continue. At present the United States is the only great market for gold. The bulk of the world's annual output is sold to that country and, as the amount is greatly in excess of the normal currency and credit requirements, the effect of the over-supply is to force down the value of gold. Depreciation of gold means a rise in prices in the United States and a fall in the value of the dollar measured in sterling. Even if prices rise here, as they will under improving trade, they will not rise as fast as they must in America under the influence of an excessive gold supply, and if there be no deflation in either country, sterling will slowly appreciate until it finally reaches par.

INCREASED PRODUCTION THE REMEDY.

Let me remind you that just as inflation which causes prices to rise will always be ultimately checked by the refusal or incapacity of the consumer to pay, so deflation will be checked by the restriction of output which follows upon falling prices. Those who advocate the deliberate adoption of a policy of continuous deflation are oppressed by the fear that at any moment an excessive amount of credit may be created in consequence of the Government being compelled to borrow from the Bank of England in order to meet maturing Treasury Bills. They regard deflation as a prophylactic against inflation, just as in former days it was the practice to bleed a patient as a precuation against the recurrence of fever. But all that is necessary to meet the danger of the Government being forced to borrow excessively is to raise the rate for Treasury Bills to a point high enough to ensure the renewal of an adequate amount. The continuance of a high rate or the adoption of any other method for the purpose of forcing down prices is bound to strangle trade and reduce output, and must operate very unfairly upon the taxpayer, who is saddled with the burden of the National Debt. If we look for a revival of trade, for more abundant revenue and for a reduction in taxation, we must leave prices to take their own course under the normal pressure of supply and demand. We must not interfere with the natural flow of trade by any restriction of existing purchasing power, but must seek a general increase of wealth through a more abundant output.

Empire's Timber Resources.

Presiding at the first annual meeting of the Empire Forestry Association at the Guildhall, H. R. H. the Prince of Wales said that he was very keenly interested in forestry. He had during the last three years unrivalled opportunities of realizing the vast timber resources of the Empire and had the good fortune to visit the lumber camps of Canada and Australia. Experts computed that the world would be faced with a timber shortage, if not famine, within twenty years. It must be remembered that large areas of forest were devastated during the war, and it was estimated that not even 5 per cent of the million acres of timber cut down in Great Britain during war time had been replanted. Further three million acres in Great Britain were suitable for afforestation, and the Association should bring home to the Empire the need for acting and encouragement of afforestation.

Major-General Lovatt said there were 1,100 million acres of forest land in the Empire. Great Britain imported £120 millions worth of timber every year, and it was little short of scandal that barely 20 per cent of it came from the Empire.

The Duke of Devonshire hoped that the Imperial Economic Conference would consider Empire forestry, and said that there had been periods of great anxiety in connexion with the Empire Exhibition, but he believed that these would be brought to definite conclusion.

The Indian Budget, 1923-24.

Statement by Sir Basil Blackett, Finance Member, Governor-General's Council, India.

Mr. President, in rising to-day to present the budget statement for 1923-24, I claim and I know I shall receive, the privileges of a new comer and a new Member. It is a great privilege for me thus to be able to fulfil an old dream of returning to the land of my birth to serve India as so many of my ancestors have done. But two months is a very insufficient time for the task of preparing to present a budget to this House. I am, however, in many ways fortunate. First and foremost, I have the devoted services of the Finance Department under the Hon'ble Mr. Cook. Without their help there would have been no budget. I am the inheritor of the fruits of three years of hard labour of my friend, Sir Malcolm Hailey. If there is a gleam of light in the budget which I am about to present, it is his doing. The fruit is the fruit of seed which he had sown, and I am reaping where he has ploughed. I am afraid that he had to put up with much inclement weather with storms, and rumours of storms, but if there is promise for harvest to-day, the credit is to him. For nothing perhaps am I more indebted to him than for his share in the credit of securing the appointment of the strong and able Retrenchment Committee, which has been so well presided over by Lord Inchcape. Possibly the most interesting part of the papers which I am laying on the table to-day and in the next few days in connection with the budget will be the report of the Inchcape Committee. Lord Inchcape shocked my modesty a few days ago, by describing himself as my forerunner. He and his colleagues can perhaps be more aptly compared to the burly forwards in the American game of football on whom falls the duty of charging ahead of the man with the ball and beating down, with all permissible violence any opponent who threatens to check his progress. Whatever views individual members may take of this or that recommendation for retrenchment made by the Committee,—and I never heard any recommendation for retrenchment anywhere, except the stopping of the salary of the Finance Member, which was really popular,—I know the whole House will be unanimous in joining with me in expressing our heartfelt gratitude to the Committee for their devoted work, and, as I think, I may promise for their remarkable success inwhat is the most ungrateful of all ungrateful tasks.

2. Mr. President, my first duty to-day is to lay before this House the figures of the outturn or rather the probable outturn of the year 1922-23. Since I came to India, I have much envied the position of the British Chancellor of the Exchequer who, in presenting his budget, is always able to give accurate figures for the year which, under the British system, has just closed and not, as under the Indian system is about to close. He is not confronted, as I am, with the necessity of making what is after all only a second guess on the basis of the first nine or ten months' experience of what the real figures are for the year preceding the year to which the budget which he is presenting relates. When I have laid before the House the figures for 1922-23, I hope to make a short review of the general financial position of India at the close of 1922-23, *i.e.*, the position as it presented itself to a new-comer as I am. It will then be my task to proceed with my proper function to-day—the presentation of the budget for 1923-24.

II.—Review of the year 1922-23.

Deficit as now Estimated.

3. The budget estimates of the current year as finally passed provided for a deficit of 9.16 crores, the estimated revenue (including new taxation and increased postage and railway rates expected to yield 18¾ crores), being 133.23 crores and the expenditure 142.39 crores. There is a saving of 4.14 crores on expenditure, but the revenue will be 12.48 crores less than the estimate, so that as now revised the estimates point to a deficit this year of 17½ crores.

Revenue.

Trade Conditions.

4. Our revenue estimates were not based on a hope of any marked or striking revival in trade, although we certainly expected some slight improvement on the general trade conditions of the previous year. On the whole, this anticipation has been justified. There was considerable stagnation during the earlier part of the summer, but except perhaps in the cotton mill industry in Bombay, the general feeling prevailing in the business community has for some months been one of the mild

optimism. Considering the impoverishment of many of our former customers, our exports have undoubtedly shown a promising recovery and, so far as merchandise alone is concerned, the balance of trade in favour of India during the first ten months of the financial year has been 62 crores which contrasts with an adverse balance of 29½ crores in the corresponding ten months of the preceding year. As against this, there has been a substantial net import of bullion in the current year, but after including the bullion figures there still remains a net balance of 20 crores in favour of India instead of an adverse balance of 33 crores in the first ten months of last year.

Customs.

5. Under Customs we budgeted for a total net revenue of 45½ crores of which 9 crores was expected to accrue from the enhancement of duties imposed in the Finance Act of March last. We now expect a customs revenue, which will be some 3 crores short of the figure budgeted for. The most uncertain and at the same time one of the most important factors affecting our revenue is the import of sugar, which in the previous year had yielded us the unprecedentedly large figure of 6½ crores at the old rate of duty of 15 per cent. For the current year we did not anticipate the continuance of such abnormally large imports but expected, on the increased duty of 25% to realize about 6¼ crores. The figures of imports vary in a very erratic way from month to month which makes estimating difficult; recently, owing to a large drop in prices, imports were held up in order to get the benefit of the revised tariff valuation which came into force from the 1st January. We expect, therefore, large imports in the last 3 months of the year though the effect of this will be counter-balanced by the duty being calculated on a lower valuation. On the whole, we expect that the revenue from sugar will be less by 1½ crores than the budget figure. The excise duty on cotton manufactures will also bring us in substantially less than we expected; owing to the high price of cotton and a fall in the price of cotton cloth in the internal markets, there has recently been a reduced output for the mills, and we expect to be about 60 lakhs down under this head. As regards the other tariff heads, it is probable that there will be some deficiency in the revenue from liquors, matches, machinery, cutlery and other manufactured articles, but any losses here should be nearly counter-balanced by increased revenue from import duties on cotton piece-goods (which may give us 96 lakhs more than our estimated revenue of 5,60 lakhs), iron and steel and other metals, while the new excise duty on kerosine is likely to bring us in 89 lakhs as against 40 lakhs budgeted for.

6. Before leaving the subject of Customs, I must refer briefly to a matter which has attracted some public attention during the year, namely, our revenue from the so-called 'luxury' articles, which are assessed to duty at 30 per cent. Hon. members will have seen from time to time various articles in the press, the object of which was to show that this high rate of duty has very seriously affected the trades concerned, and it was implied, if it was not asserted, that a lower rate of duty would have brought in more revenue. These contentions are scarcely borne out by the facts. In the current year we budgeted for a return of 2,84 lakhs from the 30 per cent duty; we actually expect to receive only 11 lakhs less in spite of a considerable fall in price. The principal articles included in the 30 per cent schedule are motor cars, silk manufactures, glass bangles and beads, and tyres and tubes. Except in the case of silk manufactures, the quantities imported during the first nine months of the current year have been in excess of those imported in the corresponding period of the preceding year. Nearly twice as many motor cars have been imported; and if the value of the cars imported has fallen considerably, this is due partly to the general fall in world prices and partly to the fact that people have been importing the cheaper American car in preference to the more expensive English car. I doubt very much if the duty has had much to do with this substitution. The conclusion is that there is certainly no case at present for any alteration of the schedule.

Railways.

7. As Hon. members will have seen from the published returns, our traffic receipts from railways have been disappointing. The increase in passenger fares was expected to add some 6 crores to the receipts. Traffic, both passenger and goods, especially the latter, has, however, fallen off, and as against the estimated gross traffic receipts of 99½ crores, we do not expect to get more than 92, the small improvement over the gross earnings of last year being mainly due to the increased passenger fares. On the other hand, we expect a saving of 2¼ crores on that portion of the expenditure on replacements and renewals which is debitable to revenue, counter-balanced

by an excess of about 1 crore in ordinary working expenses. Altogether our net railway revenue is likely to be down by 5¾ crores. Taking into account interest charges, I am sorry to say that the final result for the general taxpayer will be that there will again be no profit from railways, but a loss of about a crore.

POSTS AND TELEGRAPHS.

8. The effect of the new postal rates, during the first few months of the financial year, was to reduce correspondence, but there have since been signs of recovery, and the public are now gradually getting used to the higher postal charges. For the present, however, I think, we must anticipate a diminution of 1.06 lakhs in our anticipated receipts in 1922-23. There is a small saving in working expenses, and after debiting interest, the department will probably prove to have been running at a profit of about 24 lakhs.

INCOME-TAX.

9. We expected large arrears of income-tax collections, but after the beginning of the year it became evident, not only that the allowances that we should have to make for bad debts, etc., would be large, but also that our revenue was to be seriously affected by heavy refunds which have had to be made in Calcutta as a result of the adjustment system in force under the former Act; fortunately, this will, under the new Act, not disturb our estimates again. I understand that in Calcutta companies have in many cases actually received a cheque from the income-tax authorities instead of paying any tax to Government, and the net receipts in Bengal are not expected to be more than 3¼ crores. The collections have been good in the other provinces, particularly in Bombay, though the lower profits which the cotton mills have recently been making will, I fear, affect our revenue from that city in 1923-24. Altogether, we expect a total deterioration of 3½ crores.

OPIUM AND SALT.

10. As regards other heads I need only say that we expect to get 89 lakhs more from opium than we anticipated, and there will probably be some slight improvement—7 lakhs or so under salt.

Expenditure.

INTEREST.

11. On the expenditure side, there will be a substantial saving of about 186 lakhs in our budget provision for interest on debt. Our rupee and sterling borrowings have been larger than we budgeted for, but a full half-year's interest in respect of the greater part of these does not fall due till next year; the success of our borrowings has, moreover, enabled us to fund a substantial portion of our floating debt, and the payment of interest made for short periods this year on our new loans is less than that which would have been payable for the replacement of the Treasury Bills discharged.

The House will recollect that a special provision of 60 lakhs was entered in the civil estimates as part of the expenditure in Waziristan (under the head 'Political'). We now anticipate that there will be a saving of nearly 35 lakhs therein, owing to a part of the expenditure being thrown forward to next year. There will also be a saving of ¾ crore in other civil expenditure, mainly as the result of retrenchments carried out during the year.

EXCHANGE.

The average rate of Exchange for which we budgeted was 1s. 4d. We expect no appreciable deviation from the budget under this head.

CHANGE IN METHOD OF ACCOUNTING.

12. Before dealing with military expenditure, I must explain briefly a change which has been made in the method of showing the figures; it affects all the non-commercial heads but is most marked in the case of the military portion of the accounts. Our practice in the last two years in distributing exchange adjustments has been to show them against the individual heads of account in so far as the commercial services were concerned, and to lump the entries under one head, "Exchange," in respect of the remaining heads. This method would answer well enough if the difference between the statutory rate (2 shillings to the rupee) and the actual rate was fairly small; but it gives our figures a misleading appearance when the difference between the two rates is as large as has been the case during the past two years. It was not at all surprising, therefore, that serious objection was taken to this procedure in the course of the discussion of the budget in both Houses last year, on the ground that it had the effect, on the surface, of largely understanding the actual expenditure incurred on the military services. It has now been decided to distribute the exchange adjustments between the individual heads in all future accounts and estimates. The figures of military expenditure which I shall give this morning have accordingly

been arrived at after converting sterling into rupees at the rate 1s. 4d.

MILITARY EXPENDITURE.

13. The Budget provided 65.10 crores for the established charges of the Army, 2.13 crores for Waziristan expenditure and 52 lakhs for demobilization charges, making a total of 67.75 crores. In regard to the Waziristan expenditure my predecessor stated that the figure could be regarded as tentative only, since it is always difficult to forecast the exact effect of military operations of this nature. His apprehension has unhappily proved correct and Waziristan expenditure in 1922-23 is now estimated at 3.85 crores. Demobilization charges will amount to 2.8 crores owing to the unexpected progress with the discharge of surplus officers and to a claim from the War Office for the cost of demobilization of British troops which had become surplus on the reduction of Indian establishments. On the other hand, the established charges will now amount to only 60½ crores owing to a continued shortage of British troops, fall in prices and a variety of other causes. A careful control has been maintained over these charges; and savings in budget grants have not been allowed to be reappropriated for new measures involving a permanent liability of any considerable magnitude, though a small portion had to be made available to meet initial expenditure on equipment the purchase of which could not be further postponed. In spite, therefore, of the excess expenditure of 1.72 lakhs in Waziristan, we have been able to effect a saving of 46 lakhs in the budget grant for Military expenditure.

SUMMARY OF VARIATIONS.

14. These variations in revenue and expenditure are summarized below :—

(In lakhs of Rs.)

	(+better, —worse)	
i. Customs revenue, less		3,12
ii. Income-tax revenue, less ..		3.42
iii. Opium and salt revenue, more	96	..
iv. Net revenue from railways, less		5,86
v. Net revenue from Post and Telegraphs, less ..		94
vi. Interest and Currency receipts, more ..	51	..
vii. Saving in provision for interest on debts ..	1,86	..
viii. Saving in Military expenditure	46	..
ix. Saving in Civil expenditure (including Political expenditure in Waziristan) ..	1,21	..
	5,00	13,34
		—8,34
Deficit as budgeted for ..		—9,16
Deficit according to present estimate		—17,50

III.— Position of Indian Finances at the close of 1922-23.

SUCCESSION OF DEFICITS.

15. Before I proceed to present the budget for 1923-24, I should like, with the permission of the House, to make a short survey of the financial position of India at the present time, and to attempt to give the House a new comer's first impressions, or as Mr. Punch would say, first depressions. I am afraid that much of what I say may sound rather superficial, and that I shall be open to the charge of doing what has been done before by more than one globe-trotter who, after spending a few weeks in the country, sets to and writes a book about India. One of the many books about India which I brought with me to read on board-ship on my way out was a volume entitled "The Moral and Material Progress Report". I was rather shocked by the odd assumption in the title that there had necessarily been progress. When I came to look into the finances of India for the last few years, I was tempted to wonder whether it was not rather a rake's progress. For five years in succession, India has a deficit. The accumulated total of these deficits amounts to no less than 100 crores, and this in spite of the fact that in the last two budgets additional taxation has been imposed estimated to bring in about 28 crores during the year 1922-23. Even this is not the whole story. Apart from our revenue deficits, we have spent many crores on unproductive purposes, the expenditure on which is classed as capital expenditure. New Delhi is the most obvious example. I can see no justification, other than sheer necessity for not treating this expenditure as chargeable against revenue, and in any case it ought to be repaid out of the revenue at an early date. Moreover, besides the deficit of the Central Government, the recurring deficits of the Provincial Governments and of many local bodies throughout India must not be forgotten.

THEIR DANGER.

16. I ask the House to pause a moment and consider what these deficits mean. Unfortunately, we are accustomed in these days all over the world to budget deficits, and familiarity breeds contempt in spite of the fact that more than one awful example is before us among the nations of Europe of the chaos which continued budget deficits inevitably induce. The individual who lives beyond his income year by year does not escape the penalty and the same is true of a state. The individual who makes this mistake quickly finds himself compelled to consent to a ruthless cutting down of his expenditure or is driven either to sell or to mortgage a part of the whole of his possessions ; or, in the worst event, to cheat his creditors. A state is in the same position but the position is frequently obscured by the fact that the state's creditors are in another capacity the citizens of the state and its tax-payers. And the state which is driven to cheat its creditors does not always realize what it is doing although its unsound methods are adopted at the expense not only of the wealth and happiness of its own citizens, but also at considerable risk to social order within its borders. Much of the present unrest in the world is due to the way in which states in all parts of the world have cheated their creditors by unsound currency manipulation and the creation of paper money with no real assets behind it.

INFLATION AND FLOATING DEBT.

17. India has not entirely escaped the evils of taxation through inflation, but as compared with many other countries she has come off well. Out of the total deficit of 100 crores during the last 5 years, it is estimated that 31 crores have been covered by the creation of paper money, representing nothing but the I. O. U.'s of the Government of India. The remainder amounting to 69 crores has been raised by borrowing. Moreover to the extent of 22 crores the borrowing has thus far taken the form of issues of Treasury Bills to the public. It is true that, owing to special conditions during 1922-23, we are able to reduce our Treasury Bills by 32 crores, in spite of the deficit, out of the proceeds of long-term loans. Still, 22 crores of Treasury Bills in a country like India is far too large an amount to leave outstanding. A large volume of Treasury Bills is an evil even in England, where the condition of the money market is such that it is always possible to renew maturing bills by offering a competitive rate, but in India conditions might easily arise under which even an impossibly high rate would be insufficient, and in that case the Government of India would be driven back to replacing the Treasury Bills by paper currency, *i.e.*, would be driven to taxation by inflation.

MATURING DEBT.

18. In this connection a word may be said about our early maturing debt. We have to find the means of meeting bonds during the next three or four years to the extent of 5½ crores in 1923, 3¾ crores in 1925, and nearly 38 crores in 1926. These amounts too, have to be competed for against other demands on the market, and may be said, in part at any rate, to be one of the outcomes of the deficits for the last few years.

INCREASED INTEREST CHARGE.

19. But the deficits of 100 crores can be looked at from another point of view, when again their evil effects are prominent. In the budget for 1923-24, the charge for interest would be at least 5½ crores less had it not been for these accumulated deficits. This extra 5½ crores has to be met either by reducing expenditure, possibly by reducing desirable expenditure, or by raising new taxation, or at least by maintaining existing taxes which could otherwise be reduced.

EFFECT ON INDIA'S CREDIT AND HANDICAP TO HER DEVELOPMENT.

20. Moreover, the continued deficits are threatening to impair India's credit in the market both at Home and abroad, and increasing the cost of borrowing whether for covering the deficits or for new capital expenditure. India is a country where as it seems to me there is an almost unlimited field for the new capital expenditure on new development. At the last Assembly of the League of Nations at Genoa, India established her claim to be one of the eight premier industrial States of the world. Every one admits, however, that India is only at the beginning of her industrial development, and it is out of her capital resources, *i.e.*, out of her accumulated savings and her new savings, that the capital to develop India industrially must be found. We have borrowed all that we could borrow in India and in England during the last few years for capital expenditure purposes, and we have undertaken a minimum programme of 30 crores a year for capital expenditure on Railways. I wish it could be more. So far as I can judge at the present time, the amount which might usefully be spent on profitable development of transportation in India is

limited mainly by the possibilities of finding capital resources. Yet we have spent 100 crores out of capital in the last five years in financing deficits, thereby diminishing to a corresponding extent the resources available for developing India. Let us make no mistake about it. If recourse to inflation is ruled out, if it is agreed that the concealed method of taxation by inflation is the worst of all methods the money to meet the annual expenditure of India, whether on capital or on revenue account, must come out of the savings of the country. The only exception which is not a real exception, to this statement is that some of the capital may be borrowed abroad, and it has of course been a common place of the history of the last century that capital has been found by the older industrial countries of the world for the development of new-comers in the field, to the great advantage both of the borrower and of the lender. But the amount that India can borrow abroad, is limited both by the amount available abroad which in the present condition of the world may prove a comparatively small amount for some time to come, and by the capacity of the borrower to meet the annual charges for interest. The annual charges for interest are in effect a claim on the future resources of India and ultimately come out of the same pocket as the money required to meet the rest of India's expenditure, *i.e.*, out of the savings of the people. To sum up, the deficits of the last few years have brought in their train a certain amount of taxation by inflation, a heavy annual charge on the present and future budgets of India, a deterioration of India's credit, an increase in the cost of borrowing, and a depletion of the resources available for desirable capital development.

Necessity for stimulating Habit of Investment.

21. Perhaps I may be allowed to digress at this moment to touch on a subject in which I have always taken very great interest. Every one who has studied the subject agrees that a wonderful era of prosperity would be ahead of India if the habit of investment could be stimulated, if investment in India became anything like as general a practice as it is in such countries as England and France. It is true that much has been done in recent years. The rupee loans of the last few years have been unprecedented in amount. But much remains to be done if the Indian people are to form the habit of investing their talents in reproductive enterprises rather than wrapping them up in a napkin, and perhaps I should also add, if some of them could learn to be content with sound and steady returns of the money they invest instead of looking for impossibly high dividends.

22. I have been making some inquiries as to the progress of the Post Office Cash Certificates. I was an original member of the National Savings Committee appointed in England at the beginning of 1916 largely through the efforts of Mr. Montagu, and was privileged to take part in what is widely regarded in England as a most extraordinarily successful movement. The change from thriftlessness to thrifty habits which has taken place among many sections of the English people has been described as a revolution. National Savings Certificates to the value of nearly £300 millions are now held by the small investor in the United Kingdom. When I contrast sales of the post office cash certificates which were not inconsiderable during the war when they were first started but have since declined, I cannot help thinking that there must be great possibilities of development in the system. What a great improvement in our financial outlook would result if by development of the post office cash certificate system a considerable part, if not the whole, of the money required for provincial capital expenditure could be found out of the proceeds of cash certificates! It is my earnest hope that before long means may be found for taking up this subject in earnest. It is a subject in which, above all others, if we are to succeed non-official effort must be enlisted to second Governmental action.

Growth of Unproductive Debt.

23. As the results of the deficits of the last few years and of the war, India's debt has grown from a total of 411 crores on the 31st March 1914 to an estimated total of 781 crores on the 31st March 1923. This figure includes the floating debt and the maturing debt of which I have already spoken, but it excludes no less than 63 crores of obligations which it is I find the practice to treat separately from the debt of India, though as far as I can see these obligations are just as much a part of India's debt as the rest. Taking, however, the figure of 781 crores which I have given of the total debt of India on the 31st March 1923, we find that 557 crores is classed as productive and 224 crores as ordinary to unproductive debt. The proportion of the productive to unproductive debt is one which naturally looks strikingly good to any one

who thinks of Great Britain's figure of £7,500 millions of debt, all of which has gone in powder and shot. But this comparison must not blind us to the fact that since the 31st March 1914 the total debt has increased by 370 crores and the unproductive debt by 227 crores, and we must not forget that the yield on that part of our productive debt which is invested in Railways has not been sufficient in the last two years to meet the interest charges.

24. The debt, again, has to be divided between rupee debt and sterling debt. The rupee debt has risen since the 31st March 1914 from 146 crores to 421 crores and the sterling debt has risen from £177 millions to £240 millions in the same period. The sterling debt of £240 millions represents a claim on India's production of goods and services in the future up to the value of the principal together with a further claim on those goods and services for interest during the interval until the principal is paid off.

Currency and Exchange.

25. This question of the sterling debt brings me by a natural transaction to a new subject which is certainly not the last one to be brought to the attention of an incoming Finance Member—I mean the question of currency and exchange. Now, it is no good crying over spilt milk, and I do not think the House will expect me to delve deeply into the history of Indian currency during recent years. It is easy to be wise after the event. There were some wise men, however, even in 1919-20, who held that the right course at that time would have been to adopt a waiting policy and I am convinced that, for the moment at any rate, a waiting policy is still the right policy. What was it that upset the equilibrium of the rupee sterling exchange which had been so painfully stabilized at 1s. 4d. at about the end of the 19th century? Primarily of course, it was the Great War and the adoption of inflationary methods by all the belligerent countries. Whatever system of currency had been in force in India during the Great War, it would have been profoundly disturbed by the events of 1914—18. In so far as India had a choice and was not swept along in the maelstrom of world events, India's choice was necessarily between an attempt to keep the exchange value of the rupee more or less stable and an attempt to keep rupee price more or less stable. As a matter of fact, India's first choice was the former and for some time the rupee remained at or about 1s. 4d., but then the rise in the price of silver, which occurred as the natural consequence of the fall in the purchasing power of the gold, introduced a new complication. It is impossible over a long period to keep a coin in circulation which is worth more as bullion than it is as current coin. Once the traditional figure of 1s. 4d. for the rupee was departed from, nothing remained stable, though in comparison with the rest of the world Indian prices up till 1920 remained relatively stable in terms of gold. Thus, it was essentially the rise in the price of silver which upset the Indian currency system. I need say no more of the attempt that was made to stabilize the rupee to a new or rather at the old, fixed rate of 2 shillings gold in 1920 except that it failed. Looking back, we are able to say that the attempt was an almost impossible one with all the exchanges of the world out of gear, with world prices moving up and then down with unexampled rapidity, and with relative prices as between one commodity and another fluctuating in an unheard-of manner. Can we say that the position to-day is such that an attempt to give the rupee a fixed value, whether at 1s. 4d. or any other rate, in terms of gold or in terms of some other currency, is much more likely to succeed than it was in 1920? I think not. The French are in the Ruhr; the whole of continental Europe is faced with the threat of impending chaos; throughout the world prices are unstable; sterling has approached close to par with gold but it is not yet at par; and even if it were at par, it is too soon to say whether political and monetary conditions in the United States may not lead to a fresh cycle of rising prices in terms of dollars which would almost necessarily have to be followed by a rise in sterling prices. For the moment, therefore, I repeat that the time has not yet come for a new attempt to fix the rupee, whether at 1s. 4d., 1s. 6d., or any other figure.

Strength of Indian Currency Reserves.

26. Subject, however to one essential condition, namely, that the era of unbalanced budgets, central, provincial and local, in India is succeeded by an era of balanced budgets, there is, I think, reason to regard the currency position of India with some satisfaction. We had a good monsoon last year and India's export trade has taken a turn for the better. For internal purposes the metallic reserve of silver seems to be fully ample to maintain the convertibility of the paper currency. In addition to the reserve of silver rupees, there is in the Paper Currency Reserve a sum of £24

millions in gold, and in sterling securities, easily convertible into foreign exchange, a total of £5,800,000 sterling. Over and above and outside these reserves we have £10 millions in the Gold Standard Reserve. In spite of the separation between the two Reserves, if we are looking at the resources available for maintaining the rate of exchange of the rupee, the sterling securities in the Paper Currency Reserve and the Gold Standard Reserve all serve the same purpose.

MOVEMENTS IN EXCHANGE.

27. The movements of the rupee-sterling exchange during the past year reflects a clear improvement in the position of the rupee. A year ago, in February 1922, the telegraphic transfer rate in Calcutta on London had fallen as low as 1s. 2 15/16 d., and it was not till the end of December that it reached 1s. 4d. Since then, after a rather rapid rise to over 1s. 5d. followed by a sharp reaction, it is for the moment fairly steady at between 1s. 4d. and 1s. 4½d. This improvement in terms of sterling reflects an even greater improvement in terms of gold owing to the rise which has taken place during the year in the value of sterling in terms of gold, and the improvement is reflected also in prices. The Bombay Labour Office figure for Indian wholesale prices for December 1921 was 190. For December 1922 the corresponding figure was 173. There has been a still more striking fall in retail prices of food grains. This fall in Indian prices has been taking place during a period in which there has been an actual rise in dollar prices and sterling prices have remained approximately stationary.

GENERAL OBSERVATIONS ON EXCHANGE.

28. I have said that I do not think the time has come for fixing on a new policy in regard to exchange. I do, however, want to make one or two general observations. There is no sanctity in this era of instability about any particular rate of exchange, whether 1s. 4d., or 2s. or anything else ; it is simply a question of what rate of exchange best suits India's needs. Ultimately, India's payments outside India, are, and must be, made in the form of exports of Indian goods and services. But, if we look at the matter from the narrow point of view of the budget, the following statistical data are of interest. The Government of India's sterling debt of £240 millions sterling at 1s. 4d. amounts to 360 crores, at 1s. 5d. it amounts to 339 crores, at 1s. 6d. it amounts to 329 crores, while at 2 s. it amounts to 240 crores. Of the deficit for 1922-23, 5½ crores would have been saved had exchange been at 1s. 6d. and 9½ crores if it had been at 1s. 8d. Statistics proverbially can be made to prove anything. Nevertheless, these figures are striking and it must be remembered that, apart from the sterling indebtedness of the Government of India, there are large sterling debts owed by municipalities, port trusts and many other Indian borrowers, who would all be individually benefited by a higher exchange so far as their sterling indebtedness is concerned. Then, again although since 1920, the tendency of rupee prices to remain relatively more stable than world prices, or rather to follow changes in world prices rather slowly, has to a large extent, ceased to co-operate, it is very doubtful, I think, whether internal prices in India have yet adjusted themselves to a level corresponding to a 1s. 4d. exchange, so that were exchange stabilized now at 1s. 4d., internal prices would have to go up, and certainly there are various kinds of Government expenditure, which would have to go up considerably in terms of rupees. Finally, we do not want ever again to find the rupee more valuable as bullion than as currency. That is one side of the picture. There is, of course, another side. An attempt to force up exchange violently would at once cause stringency. Severe stringency in the money market is never desirable for its own sake, is always bad for trade for the time being, and is most inconvenient from the point of view of a Government which is engaged on a programme of capital expenditure, involving considerable capital borrowings. Any policy which threatened seriously to restrict India's exports is also to be deprecated, and trade above all desires stability of exchange, perhaps even more than stability of prices. I myself had some part in the International Conference at Genoa last April and May, and the first recommendation of that Conference was that "an essential requisite of the economic reconstruction of Europe is the achievement by each country of stability in the value of its currency." If, therefore, the time has not yet come for an attempt finally to stabilize the currency of India, stability is our goal and we mean to achieve it at the first opportunity.

IV.—Budget for 1923-24.

EXPENDITURE.

29. While drawing attention to the above recommendation of the Genoa Conference, I am naturally led to quote another of its most important recommendations which reads :—

"In each country, the first step towards re-establishing a gold standard would be the balancing of the annual expenditure of the State without the creation of fresh credit unrepresented by new assets. The balancing of the budget is the first consideration."

What then about the budget for 1923-24? Is it going to be balanced? The members of the Legislature are not the only people in India who are taking an interest in this question. Only a few days ago, I received the following post card :—

"Sir, kindly let us know by wire at our expense whether the customs duty will be decreased or increased on foreign imported wines and spirits. Awaiting your favourable reply by wire."

RETRENCHMENT COMMITTEE.

30. At the outset of my statement of the figures for 1923-24, I must explain what action the Government of India propose to adopt in order to be able to show the results of the report of the Retrenchment Committee in the budget figures. The first part of the report of the Inchcape Committee came to the hands of the Government little more than a fortnight ago, while the second part of the report reached us only on Saturday last. The complete and final report was not signed until yesterday. It has been a difficult problem to decide how to fit the proposals of the Retrenchment Committee into the budget. A report of this importance obviously requires careful and detailed examination by the Government of India in consultation with the Secretary of State, and the House will naturally desire an opportunity of studying the proposals on their merits. There has not been time, therefore, for final conclusions to be arrived at in regard to a great many of the Committee's recommendations. On the other hand, it was obviously necessary to frame a budget in which allowance would be made for the reductions in expenditure which we all expect to result from the Committee's work. In any circumstances, it would, of course, have been impossible and it is clearly recognized by the Retrenchment Committee itself that it would be impossible to obtain the full value of the cuts which are to be made in the first year of operation. Some of the retrenchments proposed can only be introduced gradually so that allowance has to be made for what I may call the "lag", while in many cases allowance has to be made for extra expenditure on what I may call the "terminal charges," *i.e.*, special charges which have to be incurred in closing down establishments and getting rid of the staff. Throughout its report, the Committee's recommendations are given in the form of reductions on the budget figures for 1922-23, which are of course quite different from the budget figures for 1923-24 as they appear before allowance is made for special cuts based on the Committee's recommendations. A fair proportion of the total recommendations recommended by the Committee are either automatic reductions on the 1922-23 figures or actual retrenchments which we ourselves have been able to effect in the budget for 1923-24 in advance of the receipt of the Committee's recommendations. The activities of the Committee cast their shadow before, and estimates prepared in the atmosphere of economy which they created naturally reflected part of the atmosphere.

RETRENCHMENT PROPOSALS.

31. In the military budget, we have been able to take credit for the reductions, which, subject to final agreement with the authorities in London, we propose to effect as the outcome of the Retrenchment Committee's recommendations. This we were able to do because we had advance knowledge of the reductions which were going to be proposed, and His Excellency the Commander-in-Chief, working in close co-operation with the Retrenchment Committee and with his colleagues in the Government, had arrived at a general agreement in regard to the total. In the case of the Posts and Telegraphs budget, we have been able to present figures showing the effect for 1923-24 of some though not all of the reductions which we propose to expect in consequence of the recommendations of the Retrenchment Committee. Our preparations could not be so far advanced in regard to the other civil departments. It was necessary to prepare, for the purpose of presentation to this House, the estimates for the demands for grants before we had sufficient knowledge of the proposals, which were going to be made by the Retrenchment Committee. The estimates for the demands for grants which are about to be presented accordingly show the figures of civil expenditure before allowance is made for special retrenchments consequent on the report of the Committee. As I have already explained, this does not mean that none of the results of what the Committee recommends appear in those estimates, but simply that the final retrenchments are not included in the figures.

CIVIL EXPENDITURE.

32. Our problem therefore has been how

to include in the budget statement the additional reductions which we hope to effect after studying the report of the Committee, and how to place the House in a position to examine and vote on the demands for grants in proper form. The Government are not yet in a position to announce definitely which of the particular recommendations of the Committee will be adopted; nor has it been possible to frame an accurate forecast of the allowance to be made for the fact that particular retrenchments cannot come into full effect as early as the 1st April 1923. But after giving careful consideration to the report, the Government of India have decided that they will be justified in taking the responsibility of saying that they believe that a reduction of 4 crores can be effected, over and above what has already been done, either in the ways proposed by the Retrenchment Committee or by some modification of them. A further paper will be circulated as soon as possible showing how this lump sum reduction of 4 crores is proposed to be spread over the various heads, and when the time comes for voting upon the demands for grants, the House will be asked to vote not the original total of each head but only the total as reduced in each case by the special cut made in the light of the Retrenchment Committee's recommendations. In the non-military portion of the budget excluding interest, the Committee recommend reduction of about 8 crores on a total budget estimate in 1922-23 of 103.9 crores. The corresponding figure in our detailed budget statements for 1923-24 is 101.3 crores, a reduction of 2.6 crores. The House will see that our cut of 4 crores together with the amount of 2.6 crores which represents retrenchments proposed by the Committee already taken into account of in the estimates makes a total of 6.6 crores. The difference between these two figures amounting to 1.4 crores represents the allowance which it is thought necessary to make for the fact that many of the recommendations even if accepted cannot be in full operation during 1923-24. This allowance is not a large one. The Government of India will do their utmost to make sure of converting their hopes into accomplished facts and will leave no stone unturned in their endeavour to make actual reductions to the full extent of the 4 crores. We must cut our coat according to our cloth, and where necessity drives, we must be content to forego even desirable outlays. But I cannot conceal from the House that it will task all our ingenuity to give full effect to the 4 crores reduction within the year 1923-24 and that some risks are being taken in assuming that figure for budget purposes.

Military Expenditure.

33. Some risks are also being taken in regard to our military expenditure, risks of the same financial kind as in the case of the civil expenditure owing to the uncertainties caused by the circumstances in which our estimates have had to be framed, and risks of a military nature as well. In the case of military expenditure the total for which the House will be asked to provide funds in 1923-24 is 62 crores. This figure represents, as I have already explained, the total required after taking into consideration the recommendations of the Retrenchment Committee. This total which includes 1.69 crores for expenditure in Waziristan, compares with the total of $67\frac{3}{4}$ crores for 1922-23, a reduction of $5\frac{3}{4}$ crores.

34. Opportunity will arise in the ordinary course for a general discussion by this House of the Army expenditure but I may say that in the forefront of these reductions and forming the pivot on which the other reductions depend is a substantial reduction in the strength of British and Indian forces.

Reduction of Troops.

I am not in a position to-day to give details of the reductions in troops which it is proposed to effect. These reductions are being discussed between the Government of India and His Majesty's Government. The form which the reductions should take is necessarily a matter of some intricacy and complication as it is desirable to impair as little as possible the essential structure and organization of the army and so to retain after the reductions the maximum degree of efficiency. The decision, as the House will understand, is also a very responsible one and the difficulties being what they are, there simply has not been time to arrive at final decisions. In any case the full financial effect of these reductions and of other proposals in regard to the military expenditure cannot for practical reasons be expected in the coming year. If these reductions and the others which have been agreed upon could have been fully and effectively in operation by the 1st of April 1923, the net military budget for 1923-24 would be 57.75 crores, but a sum of 4 25 crores has to be allowed for special expenditure in Waziristan and for the fact that the reductions cannot be in full force throughout the year.

TOTAL EXPENDITURE, 1923-24.

35. It is not my intention to-day to go through the expenditure for 1923-24 in detail. Full statements under the various heads will be circulated, and I think it will be for the convenience of the House that I should leave Hon'ble members to study these for themselves. It will be enough for me to say now, therefore, that as compared with the original budget estimate of expenditure for 1922-23 of 215.27 crores inclusive of the working expenses of commercial departments, our total expenditure of 1923-24, taking sterling expenditure at the rate of exchange of 1s. 4d. per rupee, is estimated to be 204.37 crores, a reduction of 11 crores in spite of an increase of 1¾ crores for interest.

REVENUE, 1923-24.

36. I turn now to the Revenue. In framing our revenue forecast, we have assumed that trade conditions will continue much as they are at present. We have allowed, that is, for a small growth in revenue such as may normally be expected from year to year; we have not counted upon any early boom in foreign trade.

CUSTOMS.

37. Under Customs, I do not think we can prudently anticipate for next year imports of sugar on anything like the same scale as in 1921-22, and allowing for the new tariff valuation we estimate a revenue from sugar of 5 crores as against 4¾ crores for the current year. As regards the other tariff heads, we have either repeated the figure which we anticipate for the current year, or have provided for a small increase where an expansion seems probable. Altogether we assume a total gross revenue of 45.99 crores, or, allowing for refunds, a net revenue of 45.09 crores, which is 279 lakhs more than what we now expect to collect in the current year. This figure is arrived at after allowing for a reduction to 5 per cent all round of the export duty on hides and skins, a reduction necessitated by the state of the trade.

INCOME-TAX.

38. As regards income-tax, we shall not again have to make the heavy refunds to which I have already referred; on the other hand, there is fairly certain to be a falling of revenue in Bombay, while the collection of arrears will also be less; these may be expected to balance each other, and we have entered a revenue of 19 crores, which is roughly the same as we expect to raise this year.

RAILWAYS.

39. I come now to the Railway Budget. There is no doubt that as soon as any marked revival in internal trade takes place, railway earnings ought to show a considerable rise; the autumn harvest has been so good and the promises of the spring crop are so favourable that it is not unreasonable to expect a revival before long. The difficulty is to say how soon this revival will occur. Traffic receipts suffered a check in 1922-23, and on the whole I do not think it is safe to budget on the assumption that there will be a very rapid revival in 1923-24. Our estimate for gross traffic receipts is accordingly put at 95½ crores. It is 3½ crores higher than the revised estimate for 1922-23. Two factors account in the main for this increase of 3½ crores. The first is that in the earlier months of 1922-23 there was a considerable loss of revenue due to the strike on the East Indian Railway and the second is that the present increased rates did not come fully into effect on all Railways until about the 1st of July 1922.

Working expenses and interest and other charges, without allowing for the share attributable to this head of the Inchcape Committee's cut, amount to nearly the same figure, leaving a net profit for the year of 35 lakhs which compares with the net loss on the current year's budget as now revised of Rs. 92,60,000.

POSTS AND TELEGRAPHS.

40. In the case of Posts and Telegraphs, we are able to estimate a net receipt of 147 lakhs as compared with the net receipt of 24 lakhs in the 1922-23 budget as revised. This improvement is due in part to expected recovery in revenue and in part to reductions in working expenses made in anticipation of, or in consequence of the recommendations of the Retrenchment Committee.

TOTAL REVENUE.

41. We thus arrive at the following budget position on the basis of existing taxation. As against an expenditure of 2,04.37 crores, we have an expected revenue of 1,98.52 crores, leaving a deficit of 5.85 crores. Before I proceed to explain to the House what we proposed to do in regard to this deficit, I must turn for a moment to our ways and means position.

V.—Ways and Means.

42. Public attention is usually concentrated on the annual budget of revenue and expenditure, but the ways and means budget is of equal importance, for after all it is the ways

and means budget which shows the sums which the Government has to pay out under one head or another during the year, and the sums which it has to get in from the public. Whether it is a provincial overdraft or an advance on capital account, or whether it is a revenue deficit, the money to meet the outgoing has to be got in before it can go out. The ways and means budget is, however, one which it is difficult to present in a clear and easily intelligible form. It is never possible to adhere to a strict programme in regard to ways and means operations. In financing the country's various liabilities and in finding cash for our own and the provinces day to day disbursements, we have to be guided very largely by the changing conditions of the money market both here and in London.

FUNDING OF FLOATING DEBT.

43. During the current year we expect to meet liabilities over and above what has been met from revenue, amounting to 106 crores. These will have been financed mainly out of the proceeds of our rupee and sterling loans which have been on an unprecedentedly large scale. Our rupee loan realized nearly 47 crores and £31½ millions was borrowed in London during the year. One satisfactory feature of the year, to which I have already referred, is that out of these borrowings we have been able to reduce our floating debt by 40.6 crores, of which 32.4 crores consist of a net discharge of Treasury Bills held by the public and 8.2 crores of a cancellation of Treasury Bills held in the currency Reserve. We cannot hope to continue the reduction of floating debt on the same scale over a long period, but I feel sure that the House will agree with me that it must be our constant policy to secure the early extinction of the floating debt by its conversion into securities of longer term.

REMITTANCES TO LONDON, 1922-23.

44. Our sterling borrowings have facilitated the provision in London of the sums required to meet our sterling obligations during the year. But advantage has been taken of the strengthening of exchange which occurred at the new year to effect remittance by the method of selling Council Bills. Weekly sales have been taking place of moderate amounts since the beginning of January and we have thereby been placing funds in London at a moment which although somewhat in advance of actual requirements is nevertheless convenient to the market. We anticipate that our balance in London will be about £8 millions on the 31st March, 1923, as against a normal minimum balance of £4 millions, but the surplus will be required early in the new financial year.

SUMMARY.

45. The following statement summarizes the ways and means operations for India and England together during 1922-23 and 1923-24 :

(Crores of rupees)

	Revised.	Budget.
Liabilities.		
Railway capital outlay ..	21.4	38.6
Delhi, Irrigation and Telegraph capital outlay..	3.0	2.9
Discharge of funded debts, etc.	12.4	5.2
Discharge of Treasury Bills—		
With the public ..	32.4	5.5
In the Paper Currency Reserve	8.2	
Loans to Provincial Govts.	11.4	13.5
Central Govt.'s revenue deficit	17.3	..
Drawings of Provincial Governments	..	1.3
	106.1	67.0
Met as follows :—		
Central Government's revenue surplus .	..	.2
Surplus revenue of Provincial Governments ..	1.0	..
Rupee loans	46.9	25.0
Sterling loans (converted at 1s. 4d.)	47.3	22.7
Net receipts from Savings Bank deposits, etc. ..	3.1	5.0
Miscellaneous items ..	2.5	2.2
Reduction of cash balances	5.3	11.9
	106.1	67.0

FORECAST FOR 1923-24.

46. In 1923-24, if the measures which I propose are adopted, we shall not again have to face the necessity of financing a large revenue deficit. Our largest liability will be for Railway Capital outlay. During 1922-23, it has not been possible to spend the full 30 crores allotted under the 5 year programme; there will be a large carry forward. We are adding this to the 30 crores for next year, making a total of 38.6 crores to be provided for capital expenditure on railways in 1923-24. We have about 5¼ crores of maturing bonds to meet, and our other capital outlay is

expected to reach about 3 crores, Loans or overdrafts to the Provincial Governments will absorb 13½ crores, the greater part of which will go to the Bombay Government for expenditure on their Development scheme.

REMITTANCES TO LONDON, 1923-24.

47. We expect to start the year, as I have already said, with a cash balance of £8 millions in London. We are assuming, for the purpose of the Ways and Means estimate, that we shall be able to raise £15 millions by new sterling borrowings. We are assuming for budget purposes also that we shall be able to secure a rupee loan of 25 crores. With these resources, we hope to meet the liabilities I have mentioned, and in addition to effect a further reduction of five or six crores in our floating debt. In addition to the new sterling borrowings of £15 millions we estimate that we shall require to remit £27 millions to London from India during 1923-24. It is unnecessary, I think, for me to discuss at the present moment, various alternative methods of effecting this remittance. In addition to the ordinary method of purchase of exchange, the £5¾ millions in the Paper Currency Reserve in London, and after that the Gold Standard Reserve of £40 millions, can be drawn upon against an equivalent earmarking of rupees for those Reserves in India. Which particular combination of the various methods available will be adopted is a matter upon which it is impossible for Government to commit themselves in advance, since much must depend upon exchange conditions during the year.

VI.—Provincial Contributions.

48. There is another subject on which I should like to say a word owing to its close connection with the problem of covering our deficit, and that is the vexed question of the provincial contributions. I do not think that any one considering Indian finances at the present time can fail to be impressed by the undesirability of a long continuance of the present unsatisfactory position in regard to the provincial contributions. The Government of India have stated plainly that, as soon as they are able to do so, they intend to reduce, and eventually extinguish, these contributions. I am aware that this is not the solution which finds universal favour, though I think this is what the majority of the provincial Governments desire. But so long as we have a deficit in the central budget, it is obviously impossible for us to make a beginning with the reduction of provincial contributions. Meanwhile, every provincial Government, without exception, is finding very great difficulty in balancing its budget. The majority, I am afraid, did not succeed in doing so in 1922-23, though they are doing better I am glad to see for 1923-24. It has been suggested to me by more than one spokesman for the provinces that there is a feeling in the minds of the provincial Governments and of their Legislatures that it would be unwise for them to show balanced budgets. They are, it is hinted, taking a leaf out of the book of some charitable and religious bodies which make a habit of showing an annual deficit in order to make a striking appeal to their supporters to come to their rescue. The provincial Governments think, it is said, that they will get more sympathy from the central Government and get rid of their provincial contributions quicker if they can show a handsome deficit and appeal to the charity of the central Government. I should like to say for my part that the strongest appeal that the provincial Governments can make to me in this matter of the provincial contributions is to show themselves worthy of assistance from the central Government by strenuous and successful endeavours to make both ends meet for themselves. Much, therefore, as we should have liked to be able to make a beginning of the reduction of the provincial contributions, it is obvious that this year we must confine ourselves to an attempt to deal with our own deficit. I would, however, add this appeal to all who are interested in a reduction in provincial contributions: Let them give us their full support in any measures we propose for securing a balanced central budget in the certainty that by so doing they are hastening the day when the contributions can begin to be released.

VII.—Proposals for Dealing with Deficit.

INTEREST ON GOLD STANDARD RESERVE.

49. What then is to be done about the deficit of 5.85 crores? First of all, we propose to make an adjustment which, though little more than a change in methods of book-keeping, has the effect of reducing the apparent figure of the deficit by 1·59 crores. It is proposed to ask the House to continue during 1923-24 the arrangement made a year ago for crediting to revenue the interest on the securities in the paper currency reserve. There is a similar source of income in the interest on the £40 millions in the gold standard reserve, which is expected to amount to 1.59 crores in 1923-24. This is, in essence, of the same nature as the interest on the paper currency reserve's investments, and we propose for 1923-24 to treat

it in the same way. This change does not really add anything to our available resources or alter our ways and means position, but I think it is justified on merits.

DEFICIT CANNOT BE LEFT UNCOVERED.

50. We are thus left with a deficit of 4·26 crores and the only way left for meeting it is by additional taxation. If the House will turn its mind back for a moment to what I said about the accrued deficits of the last five years, it will recognize that it cannot leave the deficit of 4¼ crores untouched. It will perhaps be asked whether the fact that several crores in the military expenditure and a considerable additional amount in the non-military expenditure represents non-recurrent expenditure due to 'lag' and 'terminal charges' would not justify the deficit being allowed to continue for one more year. This argument unfortunately does not represent the full facts. If some crores in the military budget represent non-recurrent expenditure, on the other hand over 2 crores of the cuts made in the military budget represent non-recurrent savings, being arrived at simply by a reduction in stores. Similar considerations apply to some of the other cuts both in the military and the non-military budgets, in particular in the railway budget. Moreover, some terminal charges will still have to be met in 1924-25. Whatever our hopes may be, we have no reasonable certainty that the budget for 1924-25 would balance on the basis of present taxation. Moreover, we have not yet begun to provide anything towards making good past deficits. If 1924-25 were to turn out much better than it is possible to promise at this moment, we can, if we have got through 1923-24 without a deficit, turn our thoughts to reduction of the provincial contributions.

NEW TAXATION NECESSARY.

51. Our conclusion, therefore, is that we must ask for some increase in taxation. No one likes new taxation. It is a disappointment to the House, and it was a great disappointment to me, that new taxation is needed at all. If he is wise, a Finance Member dislikes new expenditure and dislikes new taxation even more. But most of all, he loathes and abhors a deficit. I hope the House will agree that I have demonstrated to the full the absolute impossibility of its leaving a sixth year's deficit of 4¼ crores to be added to the appalling aggregate of 100 crores of the deficits of the last five years. The House would be false to its trust if it allowed the Government to adopt so pusillanimous and mischievous a course. The credit of India is in jeopardy. It is already under the cloud of the deficits of the last five years. But India's financial record has been so good for decades preceding those five years that hitherto the damage is not irreparable. The world has trust in India's record and has felt sure that the era of deficits could only be a passing phase. It is our duty to-day to justify that trust. We have made drastic cuts in our expenditure, but we have not achieved a balance. New taxation is, therefore, inevitable.

INCREASE IN SALT DUTY.

52. What form then is the new taxation to take? We have carefully reviewed the existing taxes. In particular, we have examined those taxes which were proposed last year and not accepted. One after another we have had to reject promising expedients, and finally we have come to the conclusion that the right course is to ask the House to agree to an increase in the salt tax to Rs. 2—8—0 a maund. In a full year, this increase is estimated to yield 6 crores, but we cannot count on its bringing in more than 4½ crores in 1923-24. The House will see that this additional revenue is just sufficient to cover the deficit of 4¼ crores, to give us a balanced budget, and to leave us a small surplus of 24 lakhs. In view of the uncertainties of our estimates of expenditure, this House will agree that this is not an undue margin to leave over for contingencies.

CONCLUSION.

53. My allotted task is finished. I have laid before the House the Government of India's account of their stewardship for the year that is passing and their proposals for the year 1923-24. I am painfully conscious of the responsibility which attaches to the Member introducing the budget. He cannot hope that his proposals will receive universal approbation. I have no doubt that when the details of our proposed expenditure come up for discussion, some members will criticise this or that retrenchment as iniquitous and the retention of this or that item of expenditure as outrageous. Some other members will disagree entirely with them on one or other or both of these criticisms. But all will manage to disagree with me on some point or other. I hope none the less that the Government of India will receive the credit which I claim is their due for courageously shouldering their burden and boldly coming forward with a budget which, at one and the same time,

effects drastic reductions in expenditure and calls for a further sacrifice in the form of a new taxation. I appeal to the House for one last long and strong pull, all of us pulling together in the confident assurance that so doing we shall quickly get the boat out of the vicious current which is threatening to drag India down on to the rocks of insolvency. Once back in safe waters, I have every hope that in a surprisingly short time we shall find ourselves on the flood tide of prosperity, and shall be able to turn our minds to pleasant thoughts of reduced provincial contributions, reduced taxation, and increased devotion of our resources to the development of India. I was struck a little more than a week ago by a remark that fell from Sir Deva Prasad Sarvadhikari when, speaking on the Racial Distinctions Bill, he said that the House had had three red letter days in succession. Let us crown our success by a fourth red letter day, and end our session with a balanced budget.

Sir William Harcourt.

One of the last of the great Victorians was Sir William Harcourt, who for over thirty years played a conspicious part in English public life. His official biography has been written by Mr. A. G. Gardiner, formerly Editor of the "Daily News." (*Constable*: 2 *Vols.*, 45*s. net.*)

Few biographers have had a more picturesque subject to deal with or a greater mass of material upon which to draw in portraying his character and describing his activities. Mr. Gardiner has given us a fascinating contribution to biographical literature—a revealing, painstaking, accurate study, written with freedom and frankness— just as Harcourt would have chosen.

Cromwell wanted himself painted with his ugly warts included. Harcourt's picture would not have been complete without a record of certain unattractive characteristics of moods and temperament.

Harcourt's Part in History.

Mr. Gardiner has never allowed events to get the better of his subject. The book is not a history of the times in which Sir William Harcourt lived, but is an account of the part which Harcourt played in shaping those events. Nor does the author obtrude his own opinions —a way which biographers have. All he does in the way of personal comment is practically confined to the preface and to the last chapter.

Harcourt in many respects was a man of the seventeenth century who came into the world two centuries later. While he played a great part in public life, and was an eminent Parliamentarian, he had strange contradictions in his mental make-up. He was a Whig who became a Radical while still clinging to Whig traditions. His radicalism was entirely different from the tenets of Gladstone or of Morley. He was more progressive in some ways, but very much behind them in others. He did not, for instance, like the emergence of labour in political life, and gave Gladstone his views on the subject. Gladstone replied that he would like to see a larger representation of Labour in Parliament, and thought it was all for the national good.

A Horror of Socialism.

Harcourt favoured the Eight Hours Bill for miners, which Morley opposed. Yet Harcourt had a horror of Socialism, and described John Bright, an extreme individualist, as a Socialist, yet he lived to say, "We are all Socialists now."

Harcourt's actual political achievements were not great. He gave a great deal of attention to Local Option and to Disestablishment—questions which remain unsolved. His revolutionary Budget, including his death duties— which was a sort of capital levy— was his greatest Parliamentary monument, and it came home to him with almost tragic effect when he unexpectedly inherited the Harcourt estates.

He had two ambitions and achieved neither; he wanted to be Lord Chancellor and also Prime Minister. He was bitterly opposed to Women's Suffrage. By right of service, of age, and Parliamentary experience, he ought to have been Gladstone's successor in the Premiership but the prize went to Rosebery, whom the Cabinet preferred, although he was described as "a dark horse in a loose-box." Harcourt's failure was no doubt due to his uncertain temper.

The Jamaica Agricultural Society has decided to ask the Government to provide a small vote on the next financial year's estimates to develop the silk-worm industry in the Island.

Fodder Question in India.

By S. Milligan, Agricultural Advisor to the Government of India.*

The fodder question, like the cattle breeding question, is seldom properly understood in its wider aspects. In spite of the obvious fact that it is largely one of economics, there are many who consider that it can be solved by propaganda work. Such cries as "encourage fodder production" and "the people must put larger areas into fodder crops" assume that the cultivators wilfully neglect their cattle or that there exist large areas in India where crops can be grown purely for cattle fodder. The fact of the matter is that where holdings are large enough special areas are put under fodder, and the cattle are well fed and well kept. The great masses of the population in India, however, exist on small holdings. The cultivable area is devoted to, and in most cases is just sufficient to meet, the food requirements of the people, to pay rent or land revenue, and purchase the necessities of life, and it is the crop residues which form the main diet of the cattle of the country. This is to a certain extent true of other and more prosperous countries, but the extent to which crop residues form the diet of Indian animals is far greater than in most.

The reason, of course, is not far to seek. Animal industry, that is to say, the production of animal, as distinguished from vegetable products, is less important in India than in most countries. There is no beef-eating and dairying has yet to be developed in the arable districts, where it is practically non-existent except in favoured tracts, such as Guzerat, the Punjab Canal Colonies, etc.

The crop residues referred to consist for the most part of the leaves and stems of the grain crops, the 'cakes' produced in the oil pressing industry, and lastly, but by no means unimportant, the cotton seed after the lint has been extracted.

It will thus be readily realized that the cattle of the country are materially affected by improvements or the reverse in the staple crops of the country. It may be said at once that, other things being equal, an improvement in the yield of these crops will be felt by the cattle just as much as by the human population. The growing of efficient varieties of the staple crops, the improvement of yield by manuring or by improvements in cultivation, will effect a corresponding increase in the food of the cattle.

Conversely, the cattle may be adversely affected by a deterioration in the yield of the principal food crops, the growing of new varieties for grain purposes with no corresponding increase of straw, the growing of high lint percentage cotton without an increase in total outturn of *kapas* or the growing of crops yielding straw inferior as regards either food content or digestibility.

The importance of this point of view may be seen from the crop statistics of the country. Taking the average straw to grain ratios in the case of rice and wheat we find that the combined yield of straw from these two food crops amounts to not less than 90 million tons per annum. The straw outturn from the 50 million acres of *jowar*, *bajra*, and gram grown for food for human consumption runs into enormous figures.

Compared with such figures the amount of fodder grown specially for cattle feeding is relatively small. At the same time the importance of supplying green fodder as a mixing ration to straw is well understood and wherever possible, grass, weed, etc., are cut for this purpose. To some extent, especially in north-west India, cold weather leguminous crops such as melilotus, lucerne, etc., are grown as catch crops where the cover ripens too late to permit the growing of a *rabi* crop.

It is, however, the rice-growing areas which are badly off for green crops, and may be here noted that the smallest and worst conditioned cattle are found in these tracts. There the animals subsist almost entirely on paddy straw supplemented by the scanty stable grazing available in the dry weather and in the rains by what grass can be obtained from the field *bunds*, etc. The rice straw offers a bare subsistence ration for cattle at rest. As a working ration it is below par and if it were not for the fact that the cattle in the tracts referred to have not more than a month's hard work in the year, i.e., in the puddling season, the situation would be quite impossible.

The improvement of the cattle in the rice areas is admittedly one of the most important of problems which, at one time appeared to be insoluble without cold weather irrigation. Recent work has, however,

* Paper read before the Indian Science Congress, Lucknow.

demonstrated the existence and importance of vitamines in the diet and it now appears possible that the addition of quite a small quantity of the right class of green fodder to the rice straw ration might appreciably leave the whole. The study of the value of different green crops for mixing purposes might thus yield valuable results applicable to the rice tracts. So long as the amount of green fodder required is small enough to permit of its being grown under well or tank irrigation there need be no great difficulty for most cultivators to keep a very small patch of, say, lucerne or some such fodder growing all the year round for the sake of the cattle. If, on the other hand, any considerable area is required then the question can as far as one can see be solved only through increased irrigation facilities.

Apart from the general point of view of the maintenance of the working cattle of the country, there remains the important subject of dairying. This is the only form of animal husbandry in its true sense possible in an agricultural country with a vegetarian population. Commercial dairying is, however, only possible where plenty of green fodder is available during the greater part of the year. The rice tracts, therefore, are ruled out for this industry, but there remain very extensive high land irrigated areas where dairying is not only possible but ought to be profitable at the present rates for dairy produce. In these tracts the work cattle are on the whole good, but in many places a buffalo population for *ghee*-making has sprung up and is now competing for the fodder—a state of affairs which can only be overcome by careful breeding of cattle for dual purposes of milk and draught. There is, however, a wide field for profitable investigation not only as regards the yielding power of different fodder crops in these areas, but for their relative feeding values and the economics of manuring. There is no more promising field so far as yield is concerned or manuring than in its application to the fodder crops.

Summarizing, I should therefore recommend to the conference the special importance from the point of view of the cattle of the country of—

(1) The straw produced by the improvement, in grain yields either through new varieties of improved cultivation or manuring, both as regards quantity and feeding value.

(2) The production of green fodder for mixing purposes.

(3) The production of fodder for dairy cattle.

The Kernel in the Coconut.

Mr. L. C. Brown in a letter to the "Tropical Life", says :—

" 'Why does the kernel of a coconut go round the shell only and not form a solid lump as with other members of the nut family ?' To this I make reply : 'Whilst the nut is growing and as the shell is being formed it is filled with a liquid, commonly described later as the "milk" of the coconut. This fluid, as evaporation takes place, which, I believe, is the case, becomes coagulated, and is formed into a sticky and glutinous substance until the cavity inside the shell is always kept full with it, so long as the nut is immature. The liquid being of the nature I have described, it naturally adheres to the sides of the shell on coagulation which, at the time, are no doubt porous. The fact that the cavity inside the shell is always kept quite full of the milk in the immature stage of the nut also, it seems to me, explains why the meat or flesh inside is always so evenly distributed on the sides of the shell.' " The Editor of the Journal adds :—

Encountering Mr. H. C. Sampson, home from Madras, we asked for his views, and he was good enough to say : "The cavity in the centre of the coconut is not a peculiarity of this palm alone. Many other of the palms form their kernels in the same way, such as the Borassus palm. The kernel in this case is built up from the liquid inside the cavity of the immature fruit somewhat in the way described by Mr. Brown. This, however, is a very gradual process and takes about six months. The kernel is Nature's provision for storing up a reserve of plant food for the young plant when it commences to grow, and this reserve is, except for the thin cell-walls forming the cells, composed entirely of oil. In order that the young plant can utilize this store, the oil has to be converted into sugar. This the young plant does by forming an 'haustorium,' commonly known as the 'apple,' which grows into the cavity of the nut until it completely fills it. The 'apple' contains powerful enzymes which convert the oil into sugar, and this in its turn is stored up within the 'apple' in the form of starch. Some such provision as this is essential, since the young coconut takes a very long time to develop."

Wood Distillation.

By S. S. Aiyar, B.A., M.S., Mem. Am. Che. Socy., Mysore Research Scholar in U.S.A.

Wood distillation industry is perhaps only second to wood pulp industry in chemical utilization of wood. The process may be considered under two divisions, *viz.*, hard wood distillation and soft wood distillation. Soft wood distillation is conducted again in two ways, destructive distillation and steam distillation. Wood distillation in general is the source of many valuable chemicals which are indispensable both in arts and industry. Before the European war, this industry was the only source of acetone, acetic acid and methyl alcohol. But during the war the extraordinary demand created for acetone (used in the cordite industry) and acetic acid (for making dopes to aeroplane wings and other uses) stimulated new inventions with the result that several processes were developed for manufacturing them. Of these at least 2 or 3 processes are in a position to compete with the wood distillation industry so that the latter no longer holds the monopoly for these products. Yet it is the only source of wood spirits, methyl alcohol formaldehyde and denaturants.

All the products of hard wood distillation find use, especially the so-called valuable products. The charcoal which forms a third of the weight of wood or more, is used as fuel. Poultry and stock feed, as a deodoriser and insulator and more than all in the manufacture of charcoal pig iron which is considered to be superior to coke pig iron. In this connection it is instructive to recall, that till recent times iron and steel were made in our country by reduction of ore with charcoal and Indian steel was famous for its superiority. The famous Damascus blades are said to have been made from Indian steel and many of the old steel pillars, though thousands of years old, still speak of the metallurgical skill of the Hindus.

The condensable distillate consists of a watery liquor and a tar, the former consisting mainly of acetic acid, methyl alcohol and a little acetone in aqueous solution. Acetic acid recovered in the form of calcium acetate is the source of acetone which finds use mostly as a solvent in the manufacture of cellulose acetate films, cordite, lacquers, portable acetylene lighting and welding outfits and directly in the chemical manufacture of chloroform, idoform, etc. Acetic acid, which is recovered pure from the calcium acetate, has itself an unlimited use. It finds use in the manufacture of inorganic acetates (chemicals and mordants), white-lead pigment, synthetic organic chemicals, dyes and drugs, cellulose esters, cellulose acetate films, organic esters (artificial essences and solvents) and finally in rubber industry for the coagulation of the rubber matter.

Methyl alcohol is again the source of formaldehyde which is the standard disinfectant of clinics and hospitals and for the eradication of fungii which attack seed grains. Its use as a solvent is the most important and most varied in application. For making varnishes, lacquers, etc., for use as a solvent and chemical reagent in laboratories, as a base for artificial resins and in the making of cinema films it finds unique use.

The tar was up till recently used only as a fuel under the retorts or ovens. Now a new use has been found for the tar and the tar oils, which latter are obtained by distilling it directly or with steam. They have been used in the floatation of ores (which is by the way a process used for concentrating them) and found suitable.

The gases being combustible are burnt under the retorts, as they are too poor both in heating and lighting qualities to be of use in houses and cities. Further wood distillation plants are generally located near forests far away from large towns which alone could consume such large volumes of gases; and hence their utility for domestic purposes has not been studied.

Soft Wood Distillation.

Coniferous wood distillation is possibte only in those countries where extensive soft wood forests are exploited for timber and in consequence a large quantity of wood is available in the form of tops, trimmings, edgings, stumps & mill waste for distillation. The only valuable products sought for in this process are charcoal, wood turpentine and pine oil. The aqueous distillate contains acetic acid and methyl alcohol, but in too small quantities to pay recovery at any rate in U.S.A. The turpentine produced by the destructive distillation of soft woods (generally pine or fir) is known as wood turpentine and is sold only as second grade turpentine, inferior to gum turpentine. It is

as good as the latter for paints and varnishes, though the actual compositions differ.

To recover the turpentine and rosin pure, from the wood waste, a process of steam distillation and subsequent extraction with gasoline is resorted to known as "steam and solvent process." By this process the products are recovered unchanged unlike in destructive distillation process.

Our forests, especially in Mysore, being mostly hard wood forests, we need confine only to the hard wood (broad leaved or deciduous wood) distillation. Our coniferous forests are confined to Himalayan regions and should be better utilized for turpentine and rosin by the more economic tapping of trees in rotation.

Hard Wood Distillation.

More than any other industry, wood distillation industry opens out a new channel for the economic and profitable utilization of wood waste. In our lumbering methods wood available for cutting big straight logs are alone used and the remainder of the tree is left to waste, not only waste of usable wood but also a menace to the standing forest. On the otherh and a number of chemicals which could be made from this source and whose demand is every day increasing, are imported in large quantities and high prices paid for them. Both from the standpoint of forest conservation and that of the national needs it seems desirable that a number of wood distillation plants should be started. The greatest producers and consumers of wood distillation products have been Germany, Austria (prewar), U.S.A. and Canada, U.S.A. being the largest producer and consumer. Sweden, Japan and France have developed this industry to a certain extent and use on an average 35,000 tons of wood each every year. Italy and Argentine are carrying on small scale trials, while in India, Mysore will be the pioneer to instal a modern large scale plant. The enterprise of Mysore must be an example to other parts of the country, both to Governments and capitalists.

Wood distillation industry is the source of valuable products which will always be in ever increasing demand. Acetic acid especially is in demand in the rubber plantations of Malay Peninsula and the East Indics and there is no doubt a market could be found there for our products. Though the results of investigations on our wood in the Indian Institute of Science have shown that our woods yield less of the valuable products than European hard woods, yet we need not be deterred by it. Even granting that the results are conclusive, the difference in the yield can be more than made good by the favourable wage and wood costs. Further the yields could be increased by applying the principles of temperature control and other recent improvements in the process.

Development of the Process.

Wood distillation industry takes its origin in the charcoal kilns of our country where perhaps charcoal was first made in connection with our metallurgical process of old. These kilns whose design and work is familiar to all, were meant to make only charcoal and even this product would be only about twenty per cent of the wood while in the modern wood distillation plant the yield comes to over thirty per cent.

The first step in the advance was the modification of the kiln into a brick kiln with by-product recovery appliances. In this brick by-product kiln the same old method of heating (by partial internal combustion) was used, but with much control on the draft and combustion. The products of distillation and combustion were carried through condensers and recovered, though they were only half of that from the distillation in closed vessels.

The next improvement was the use of cylindrical retorts about five feet in diameter and nine feet long, set in furnaces, two for each furnace. They were loaded and unloaded by hand. These two types still exist and the retorts are still common in Europe, either in the form of stationary ones set in furnaces or movable ones. These latter are generally suspended in the furnace and can be removed bodily by means of a moving crane to a cooler while another loaded retort takes its place.

For handling large quantities of wood, especially in America, where whole forests are wastefully cut for this and single plants consume daily 80 to 200 cords (cord=3,800 lbs. roughly), the plant equipments have been modified considerably. The distillation vessel is an oven 6 or 8 feet in cross section and 45 feet or over in length. Wood comes in steel cars called 'buggies' which move on rails. Wood is used both in the form of cord wood or bolts and is generally loaded into the cars by mechanical contrivances.

As wood is generally cut green in the forests, it is necessary to season them for 12 or 18 months. Hence, the plants should have large wood yards where at least an year's supply

is carried, which means large expense and overhead. To avoid this, a system of drying the wood in the pre-heaters is adopted in a few plants, where waste heat of the flue gases is utilized to dry the wood to a low moisture content and at the same time warm up the wood for the retorts. In these pre-heaters, green wood may be dried to 10 or 15 per cent moisture in 2 or 3 days, so that by keeping steadily 3 days' stock in the pre-heaters, the ovens can be steadily fed with dry warm wood. While cars of dry wood are moved from the oven end of the heaters, fresh loaded cars are sent in from the other end to keep up the cycle.

The wood either dried in pre-heaters or seasoned in the wood-yard is fed into the ovens. The ovens take 2 to 4 cars each with 3 to 4 tons of wood. The ovens are never allowed to cool as the movement of the wood is speedily done on rails and the charcoal is speedily withdrawn. Thus the distillation is continuous and heat is economised. The distillation is generally finished in 24 hours, the retort house at least working all the 24 hours on three shift basis. The ovens are heated by means of fire boxes on one or both ends, and the tops are tiled to serve as a drying floor for the acetate of lime. The vapours of distillation pass through outlet pipes at one or both sides (not on the ends) to the condensers (from which the condensates run into a common tank (wooden) where they are allowed to settle to separate the tar from the pyroligneous liquor. Condensers are of different kinds, but the tubular type is the most efficient.

Here it is necessary to mention that the gas, however, well cooled, carries away with it appreciable amounts of acetic acid and methyl alcohol, both in the form of vapour and fine mechanically suspended particles. In our country, especially, where except during winter, the water is not really cold there is apt to be a greater loss. Hence it may be necessary to pass them through a scrubber—a tower filled with coke or stones down which water or better cold pyroligneous acid is run while the gas bubbled from the bottom. A "cottrel precipitator"—an invention of the Research Corporation of U.S.A.—in the gas line completely stops the escape of valuable products as fog. But the installation may be too costly for our purpose.

Working up the Valuable Products.

The condensates from the condensers run into a wooden tank where they are allowed to stand for two or three days, at the end o which period the liquid separates into two layers,—a top aqueous layer and the bottom tarry layer. The watery layer known as pyroligneous acid contains mainly acetic acid and methyl alcohol, a small quantity of acetone, and little of some esters and higher fally acids in aqueous solution. It also contains some pitchy matter known as dissolved tar which gives it a burnt smell and brown colour. It is necessary to remove this tar before neutralizing the liquor with lime. The purpose of neutralizing the acid liquor is on the one hand to separate the alcohol from the acid and on the other to get the acid in a form suitable for subsequent purification or conversion to acetone. So the pyroligneous liquor ir run into copper stills provided with fractionating columns and distilled. The clear distillate is run into neutralizing tank and there neutralized with slaked lime. During this process a considerable quantity of solid precipitate called "lime sludge" settles at the bottom, which must be washed to recover the soluble calcium acetate. The clear supernatant liquor is then distilled again under fractionating columns when the commercial wood spirit is obtained. The crude wood spirit is further purified by fractional distillation when the contaminating impurities consisting mainly acetone, other simple ketones and water are separated. The impurities come off mostly in the first and tailruns and are used mostly for denaturing alcohol.

The impure solution of calcium acetate left in the stills, is concentrated either in double or triple effect evaporators or vacuum evaporators, evaporated and finally dried on the floor specially prepared for that purpose over the ovens. Acetic acid attacks all common metals except copper easily, and so the acidic liquor is always handled in wooden or copper containers. The neutralized solution however may be distilled in an iron still.

The grey acetate of lime obtained in this process is used for making acetone and acetic acid. Generally wood distillation plants sell their acetate of lime and crude wood spirits to refineries and chemical plants where they are further worked up or refined. However, there are a few big plants which make their own acetic acid, acetone, methyl alcohol and even formaldehyde. From the acetate of lime, acetic acid is liberated by the action of strong sulphuric acid. Requisite quantities of both materials are mixed into a paste and distilled keeping the paste stirred by powerful stirrers. Curude acid containing 75 per cent acetic acid

distils over and is further refined by fractionation. Pure acid is however made by converting calcium acetate to sodium acetate, fusing the latter and distilling the fused sodium acetate with concentrated sulphuric acid. The product so obtained will have to be once more distilled with concentrated sulphuric acid and fractionated to give pure glacial acetic acid.

Acetone is the main product of the dry distillation of the acetate of lime, the impurities being some higher ketones coming from the calcium salts of certain higher fatty acids always present in the pyroligneous acid liquor. These higher ketones are separated by fractional distillation and go to form the so-called acetone oils which find use in denaturing grain alcohol.

Methyl alcohol which is recovered from lime acetate stills as crude wood spirits, generally contains some acetone and other impurities and is purified by fractionation. In U.S.A. the refining is carried on at a central plant. But in our country where solitary plants may spring up, it may be necessary to have alcohol refinery, acetic acid, acetone and formaldehyde plants as well. In the purification of wood alcohol no chemical method is used. Rectification is the only process adopted, and this process is so improved that the loss is not over one per cent and the product obtained is pure without odour or acetone impurity.

Charcoal after leaving the retort or oven, must be cooled out of contact with air. For, charcoal when fresh has a very great capacity to absorb gases, as a result of which the temperature of charcoal rises. When hot fresh charcoal is exposed to air the heat developed by absorption of gases of the air becomes so great that spontaneous combustion will result. In retort plants the charcoal is dumped into containers which can be closed; or in the case of movable retorts the retorts with charcoal are conveyed to cooling chambers which can be shut off from air. But in oven plants where carloads of charcoal is to be handled, the cars are moved to air-tight coolers behind the retort house. On leaving the ovens, the charcoal cars are drawn into the first set of coolers and allowed to cool there for 24 hours. Then another 24 hours cooling is given in the second cooler and finally left in an open shed for another 24 hours. This precaution is necessary to ensure not only the cooling of the charcoal but also saturation of the charcoal with air.

After being cooled in this manner for 72 hours, the charcoal cars are moved to the charcoal dock where the charcoal is dumped to facilitate loading into railway trucks.

Wood Tar.

The composition of wood tar is very complex. It consists of a number of higher phenols of which about sixteen have been detected, and a number of aldehydes, ketones and acids many of which have also been detected. Phenol and cresols which are the valuable products of coal tar occur only in very small quantities in wood tar. The higher acids occur mostly as methyl esters. Small quantities of benzene and xylene have also been detected. The products for which coal tar is so valued occur only in small quantities or do not occur at all in wood tar. Hence wood tar has so far found no better use than that of fuel.

The tar always retains appreciable quantities of acetic acid and methyl alcohol which it pays to recover. So the tar is distilled in wooden stills heated by steam coils. The distillate goes to the neutralizing tank with the pyroligneous liquor distillates.

The tar itself may be separated by distillation, into light oils, heavy oils and pitch. The light oils are good for solvent purpose, the heavy oils may be used as disinfectants and preservative and the pitch has been used as water-proofing and insulating material. Different combinations of these oils and the tar itself have been recommended for flotation purposes in the concentration of mineral ores. How far this will be popular in our country is open to question, and much preliminary work both in chemical and commercial lines will have to be done before they can be popularized.

The residue remaining in the tar stills together with the residue of the primary stills is used as fuel.

The Plant—Its Management and Operation.

Big wood distillation plants must own their own timber lands to ensure steady supply of wood. In U.S.A., wood distillation companies own forests as large as 50,000 acres and sometimes lease tracks as large. These companies are said to have now one of the best forms of forestry, utilize the products most completely while stimulating maximum growth and eliminating as far as possible forest fires. While maximum utilization is sought, the vigour of the forest is maintained and growth renewed both from sprout and seed.

In addition to extensive timber lands,

the plant must be near to good fuel supply. If wood is to be used as fuel no new fuel need be sought. But at times coal, natural gas, are also used in addition to charcoal, wood, wood tar and wood gas. In our country, especially in Mysore State the last three are the only available fuels. The utilization of wood tar and wood gas minimises the use of wood for fuel. The cost of fuel for cord of wood (3,800 lbs.) is estimated to be about six to seven rupees in U.S.A. It should not be more in our country. The fuel value of wood tar is twice that of coal weight for weight.

The labour requirement varies with the country. American or even European system should not apply to our country. In America, the use and invention of labour saving appliances was and is a necessity owing in the beginning to labour shortage and now high cost of labour. But in our country where unemployment is large and wages owing to competition and thick population small, American methods would be injurious. Of course, a modern plant should have improved appliances, but that should not mean the reduction to a minimum of human labour nor even the elimination of human factor altogether.

The depreciation charges on the plant equipment are heavy in this industry. The ovens last only three to twelve years, the buggies (wood cars) 12 to 20 years and the coolers much longer. Even the copper apparatus wear out pretty fast, the life of the copper distillation stills, etc., being estimated at 10 to 12 years. Though salvage of copper brings good returns, a depreciation on the whole plant and equipment of twenty per cent would be reasonable.

The yield of valuable products varies with the kind of wood used. Hard woods yield generally more acetic acid and methyl alcohol than soft woods. Even among hard woods, certain European hard woods seem to yield more of these products than our hard woods. The results of experiments conducted in the Indian Institute of Science show that our woods yield less acetic acid than the standard European hard woods beech, birch and maple; but the yield of methyl alcohol from "Padri, Godda, Tari, Thadasalu, Kadavala, Beete" is quite good. Further experiments on other available species on a more controlled basis may show up more suitable varieties. Even the varieties now experimented upon are workable on a commercial scale.

It is always the shyness of capital that attributes all sorts of weaknesses to the industry. Questions of finding sales for the products, of procuring proper machinery and equipment, and of expert advice are some of the stock objections for launching any industry in India. When examined closely, these objections do not hold water. What other countries did we could also do. We could as well meet the needs of our markets instead of leaving them to the mercy of foreign manufacturer. U.S.A. up to 1860 imported all the acetate of lime she needed from Europe especially Germany. This was gradually replaced by the home product until now she has a large surplus for export. The same may be said of all wood distillation products and their derivatives. Art, technology and industry in India cannot for ever be smothered for the benefit of the foreign capitalists. They must develop even as they show now signs of regeneration. Even like sulphuric acid and soda, the wood distillation products are basic chemicals in various chemical and technological processes, and their demand is sure to increase in the future. So there should be no difficulty in finding a market for the products. It may be possible, if the plant is located near towns, to use wood gas for illuminating purposes. In Germany and Austria, it has been used for such purposes.

In so far as we have, at the present time, to import plant equipment, its erection and proper working will be attended to by the manufacturers. As for "experts" we have to say the word means nothing. It is the intelligence to understand, willingness for work and scope for initiative that makes an expert. Many of our graduate chemists and engineers would be able to run the routine without much difficulty. In the interest of the country the writer hopes that the country will not be flooded by third and fourth rate men under the guise of experts thus depriving our young men the only chances they can get in the world. We have seen the experts in several plants and known others who hail from established laboratories. What we lack in our country is the confidence in ourselves and a place to give our young men an insight into the technological processes. Unless industrial plants rise there cannot arise a body of experts and to argue the other way is only to beg the question.

Plant Equipment.

Plant equipment must consist first of wood torage yards, trackage and cars, retort house, till house, laboratory, store and offices. The

retort house varies in size according to the number and size of retorts used. It must be built of stone or brick and iron to avert fire hazards. The ovens (distilling vessels) are generally 6 to 8 feet in section (square) and 25 to 50 feet in length, provided with air-tight doors on either end. These ovens are not set in bricks, though surrounded by masonry walls, but are supported on iron stands to allow free play in expansion and contraction.

The cooling ovens are also of the same size as the retort ovens. The retorts must be provided with proper condensers and copper liquor lines to lead the condensates to wooden storage tank or tanks. Copper gas mains must be installed to lead the gases to boiler for fuel. If it is desired to recover the products carried away by the gases, gas scrubbers must be installed in the gas line between the ovens and the boilers or furnaces (fire boxes).

The still house must be provided with at least five wooden settling tubs, one or two copper stills complete with steam coils, necks and condensers for primary distillation, and wooden storage tanks for distillate from these stills. There must be neutralizing tanks of wood with power agitators for neutralizing this distillate. Iron still provided with copper fractionating column and condenser, must be equipped for distilling the neutralized liquor. The wood spirits so obtained is to be redistilled for which purpose steel alcohol stills of the improved type must be used.

To recover the acid and alcohol in the tars, a wooden tar still with copper neck, condenser and steam coils must be provided. Necessary number of steel tanks for storing neutral liquor, crude and purified alcohol are also necessary.

For refining purposes one or two more stills, refining columns with necessary accessories in steam coils of copper, condensers and tanks must needs be provided.

Charcoal is generally stored in an elevated storage house (charcoal dock) from which it may be shot, packed in sacks or loose, into cars or carts.

These equipments, especially their size or number, vary with the size of the plant and the amount of wood distilled per day. It has been estimated that about Rs. 8,000 will be necessary for each two-ton unit of wood for large scale plants, handling at least 80 to 100 tons a day.

Distillation of Saw Dust.

The disposal of saw dust and if possible its profitable utilization has been a problem in all countries. Wood distillation process would seem to suggest itself as the best means of utilizing saw dust and other small size wood waste. But the installation of a fair sized plant, in order to pay on the investment must pre-suppose an adequate supply of saw dust in one place. Saw dust is a bulky material and it does not pay to tranship it to the place of consumption. It is this aspect of the problem that is in the way of the commercial development of the various processes devised to distil saw dust in the form of briquettes or to subject it to a continuous process of carbonization.

Briquetting of saw dust could be accomplished by means of powerful hydraulic presses, but addition of a binder material like tar or pitch will greatly help to hold the material in tact. But the briquettes have a tendency to fall to pieces when distilled. To prevent this a process of distilling them in tubular retorts under a certain constant pressure exerted on them by means of pistons, has been worked out.

There are other processes by which the distillation is conducted by a continuous process in horizontal sloping cylindrical retorts, saw dust entering on one side and charcoal dust leaving on the other. It is obvious that in this process clever devices are necessary to make the retort air-tight, at the same time permit the entrance and exit of the materials, These devices are perhaps covered by patents. In such a process again, the vapours are apt to carry lot of fine dust and clog the outlet tubes not to speak of the contamination of the liquor.

None of these has been a great success. Provided sufficient quantities of saw dust and wood waste are available, it will be worth while to try the adaptability of the different processes.

To overcome difficulties of transport and facilitate marketting, the New South Wales Railway Commissioners propose to run motor trains on branch country lines. Marked success has already attended the introduction of a motor train tested on various short lines, and the Commissioners aim at making this method of transport a permanent feature of policy. Many of the branch country lines do not pay under steam, the losses amounting to roughly £1,000,000 annually. The motor trains under construction are designed to carry passengers and all kinds of dairy produce.

The Movement for Railroad Consolidation in the United States.

By Virgil Jordan.

The chaotic and unstable situation of the transportation system of the United States is, without doubt, the most difficult and serious, if not the most sensational, economic and political problem in that country to-day. It is a cause for wonder that a country so large in extent, so abundant in resources, with such potentialities of governmental power, should have drifted so long with a transportation system so un-co-ordinated and so subject to unregulated forces of private interests. The American railroad system is the largest in the world, but it has been built up by untrammelled speculation, and has been operated in a welter of private competitive warfare, and manipulated by powerful individuals and groups for special interests to the continued neglect of public welfare from the beginning. How impossible it is to expect a vast system of this kind controlled by hundreds of private groups to subordinate itself to the public interest was clearly shown when it became necessary for the national government to take it over in the great emergency of the war. And the permanent defects of the whole present system of control are being no less surely manifested in the current breakdown of the railroads.

The fundamental weakness of the present system of railroad operation and regulation are being rapidly realized by the public, and the tendency to tinker with the existing legislation affecting the roads is an indication that, if not in the present Congress, then in some future one more responsive to popular thought, a sweeping change in railroad control may not be impossible. It would probably be too much to say that there is a drift toward government ownership, because the American temperament is not favourable to such State activities, and it feels that such an approach to the problem has been a failure in other countries. Nevertheless, the public is being convinced of the short-sightedness and inefficiency of present railroad management and grows continually more hostile to the pretensions and attitudes of the railroad executives.

This feeling was vastly increased by the shopmen's strike last year and its consequences which run down to the present. The public has been brought to realize it has been shamelessly humbugged by the railroad managements in this whole matter, through the breakdown of certain railroads in face of the need for increased transportation of coal this winter. It now knows that the attempt of the railroads to break up the national organization of this branch of railroad labour cost them nearly a quarter billion dollars, and that it was unsuccessful. The lines that have made new agreements with the shopmen are paying wages as high as or higher than the shopmen earned before the strike, and the roads that have held out against the union have so far collapsed in motive power that they have become a public menace. The whole affair was a private war between certain railroads and the unions. It cost the public enormously and left railroad labour in no weaker position than before.

The general dissatisfaction with the railroad situation is emphasized by the current unprecedented shortage of transportation which is directly due to the strike. The car shortage in November exceeded that of any previous month, and the shortage has been progressive since the strike began. In view of the dire need for moving coal this breakdown has led to wide distress and unrest. In the face of this situation the public has been told recently that the railroads have been unusually prosperous in the past year. Some of them have earned in excess of the return upon valuation allowed in the present regulatory legislation. How many roads have had a similar prosperity cannot be known because the valuation of only a few roads has so far been determined. Nevertheless these roads with an admitted excess of earnings have refused to turn their excess into the general fund provided by law for the assistance of the weaker roads.

The realization that they knew little about the real financial situation of the railroads, and this new instance of defiance of the law by the roads, of which there have been many previous examples in connection with labour disputes, have not tended to increase public respect for the railroad managements.

As a result public attention is again being drawn to the proposals for consolidation of the

railroads into a few great systems laid down in the Transportation Act of 1920. The voluntary combination of certain roads in the west and the recent merging of certain British Railroads have awakened new interest in the possibility that some betterment of the railroad difficulties might be found in such general reorganization. Nineteen great systems have been proposed by the Interstate Commerce Commission, with a view to improving the operation of the railroads generally and the financial condition of the weaker roads particularly. Probably two-thirds of the individual roads of the country are financially weak, and the consolidation of these with the stronger lines, it is believed, would materially strengthen the whole railroad system. Such consolidation could not be compelled under the present laws, and most of the stronger roads are opposed to it because it would involve a reduction of their profits. The plan, therefore, does not meet with much response from the present railroad managements who prefer to continue their untrammelled individualistic exploitation of the transportation system to their own ends.

It seems probable, however, that a sound plan of consolidation, generally carried out, would be the one means of rehabilitating railroad credit, which has vastly declined, and under wise management such large systems would afford more efficient transportation even if rates were not materially reduced. It would not only improve the financial condition of the roads generally, but have important effects on railroad labour, particularly stabilizing employment in this industry by making possible long time planning of improvements. Some of the possible effects of consolidation on labour are, however, feared by the present railroad managements. It might, for instance, tend to restore the large scale negotiation of wages and working conditions and reverse the current tendency toward negotiation on individual lines.

How far the selfish interests of the railroads will prevail against the general desire to render the railroads more sound financially and more efficient in operation remains to be seen. The consolidation proposal, however, is emerging as one of the most promising suggestions toward this end, and if the public is driven to attack the railroad problem in earnest, as present conditions indicate, it is likely that the fundamental basis of a reorganization of railroad operation will be some plan of consolidation. It would require far-reaching and strenuous government action, but it might recommend itself as a feasible American alternative to actual government ownership.

The old problem of utilizing the heat of the sun for the production of power has recently been revived in Italy. The idea of concentrating the sun's rays by means of large mirrors and lenses is not new; but, owing to the high cost of the plant and its low thermal efficiency, it so far has been little more than a scientific curiosity. An Italian engineer has now put forward, a correspondent of the *Times Trade Supplement* writes, a scheme based on an entirely different principle. He proposes to use a turbine driven by the vapour of substances which vaporize at a low temperature, such as ammonia or sulphurous anhydrides. The turbine would be erected on the margin of a lake, and the ammonia or other substance would circulate between a generator heated by the relatively warm water drawn from the surface of the lake, and a condenser cooled by cold water drawn from the bottom of the lake. In other words, the difference between the surface and bottom temperatures would be utilized. This difference in temperature is estimated at a maximum of from 10 deg. to 20 deg. C., so that the efficiency would be very low; but the inventor claims that this is of no importance in view of the simplicity and cheapness of the plant and the low cost of the power produced. It is calculated that from the great lakes of Como and Maggiore, which in summer have a surface temperature of from 23 deg. to 24 deg. C., and a bottom temperature of 6 deg. C., about 4,000 million kilowatts might be generated during the four months from May to September, at a cost of 6 centesimi per kw. (about one-seventh of a penny at the present exchange). The system would, of course, give better results if applied to tropical lakes and seas, where a variation of temperature of from 5 deg. to 32 deg. C. may be found. In this case the cost of the power is estimated at 2 or 3 centesimi per kw.

The consumption of cement in Canada last year was 38 per cent less than the amount used in 1913, and only about one-half of the producing capacity alone of the largest of the six cement manufacturing companies in the Dominion. Some improvement in demand is hoped for the year, but no immediate return to even pre-war requirements is in sight.

Improvement of Cocoanut Jaggery in Madras.

On the West Coast, where cocoanut trees abound, tapping for the production of jaggery has been in progress for a considerable period. The manufacture is almost entirely in the hands of the tapper classes and is, therefore, essentially a cottage industry. Though the fresh juice obtained from the cocoanut palm exhibits a high degree of purity, the jaggery obtained from it by the methods at present in use is far from good, having a bad colour, lacking cleanliness, and possessing very bad keeping qualities. These defects naturally keep down the price and the tappers do not, therefore, derive the maximum profit from their industry.

The question of cleanliness presents no difficulty and a simple but efficient form of sand filter was soon devised which even the poorest tapper can provide. Filtration, however, in no way affects the bad colour and poor keeping quality of the jaggery which have been traced down to the excessive amount of lime usually present. To prevent loss of sugar by fermentation, and to comply with the excise regulations, the pots in which the juice is collected have to be coated with lime. As the flow of juice varies considerably from day to day, it is difficult to regulate the supply of lime satisfactorily and as the prevention of fermentation is the first essential, there is a general tendency for the juice to be over-limed. When such juices are boiled they invariably assume a dark colour due to the destruction of part of the sugar by the alkali. It is found, however, that this excess of lime is injurious in another respect. In districts adjacent to the coast the juice derived from the cocoanut palm contains a somewhat high chlorine content. Following the use of lime much of the chlorine must be present in the jaggery in the form of calcium chloride which is an exceedingly hydroscopic substance. There would appear to be but little doubt that this factor accounts very largely for the poor keeping qualities of West Coast cocoanut jaggery.

While, therefore, the use of lime is essential at the tapping stage, it is desirable to remove any excess of this substance before boiling is carried out. A convenient method has been worked out for doing this and consists in the use of small quantities of alum. When this is added to the warm juice both the lime and the alum are thrown down in the form of insoluble compounds, which can be removed by filtration or better by simple sedimentation. The juice when clarified in this way has an excellent colour and yields a good hard jaggery with greatly improved keeping qualities, samples having kept well for over a month in the humid atmosphere of the West Coast whereas samples prepared by the ordinary country method liquify in two or three days.

The West Coast tappers as a rule boil down the juice in mud pots. With such vessels it is difficult to regulate the temperature and the juice is frequently overheated with bad results. The individual tapper is too poor to use better appliances, but there is little doubt that if the work were carried out co-operatively, groups of tappers would combine to purchase better boiling vessels with profit to themselves. In the hope that such co-operative working may eventually materialize, an improved form of furnace has been installed at the Kasaragod Experimental Station and here for some months demonstrations have been given by one of the Chemical Assistants of the Department, the jaggery being made by the alum method described.

At the same time, in order that some understanding of the economics of the industry may be reached, a large number of trees under tapping have been kept under observation for more than a year, accurate daily records being maintained of the yield of juice and jaggery. These records show that there is a very considerable variation in the yield of juice obtained between one tree and another, while individual trees themselves vary from day to day.

The figures obtained are at present being examined and at this stage one can only say that when the man making the jaggery does his own tapping in his spare time,—and this is the usual practice in Malabar,—jaggery manufacture yields a larger profit than the production and sale of nuts or than tapping for toddy.

The Spanish law for the protection of new industries and of those already existing will shortly expire, and representations have been made to the Government for its renewal for a further period of years. For this purpose the Ministry of Finance announces that it will be necessary to present a new bill to the Spanish Cortes. The Council of State has already expressed itself unfavourably to any extension.

Dr. Tagore's New University.

The poet, Rabindranath Tagore, has been working silently for more than twenty-two years at Santiniketan in Bengal endeavouring to build up within the Asram, which his father, Maharshi Debendranath Tagore, had founded, an institution representing the highest ideals of Indian culture. This has been his great life work, and hitherto he has carried it on almost unaided by the general public.

The institution itself, at Santiniketan, contains a school and a university combined. The university, which is called Visvabharati, is in its first stage of development, but it is already showing signs of a vigorous and healthy growth, and it is likely to fulfil a unique function in the history of modern India and in the history of the world to-day. For the poet, Rabindranath Tagore, its founder, has reached a position at the heart of the intellectual and spiritual thought of the present age which is itself unique. He has been able to interpret the East to the West in such a living manner, that the West can understand through him what the East truly implies.

Objects of the University.

The objects of Visvabharati are thus described in the schedule of the Constitution :—

To study the mind of Man in its realization of different aspects of truth from diverse points of view.

To bring into more intimate relation with one another, through patient study and research, the different cultures of the East on the basis of their underlying unity.

To approach the West from the standpoint of such a unity of the life and thought of Asia.

To seek to realize in a common fellowship of study the meeting of East and West, and thus ultimately to strengthen the fundamental conditions of world peace through the free communication of ideas between the two hemispheres.

Practical Details.

It is necessary at once to come to practical details, and to explain what progress has already been made and what help is immediately needed.

Santiniketan, the site of Visvabharati, stands on a slightly raised plateau, about 100 miles from Calcutta, near to Bolpur Station, on the E. I. Railway Loop Line. It has large open spaces around it, which are being acquired by Visvabharati for its own future expansion. The site is non-malarial and the health conditions are good. Heat and moisture are not excessive. The soil is gravel and the ground slopes away on every side. Therefore the rainfall leaves no standing water, which might breed mosquitoes.

Curricula.

Up to the present time, the subjects of study and research at Visvabharati, which have chairs already provided, are as follows :—

(i) Sanscrit Literature and language, with its cognate culture.

(ii) Buddhist Literature and culture along with the study of Pali.

(iii) Mediæval India, together with certain principal Indian vernacular literatures.

(iv) Art and Music.

(v) Indian Agriculture and Village Economics.

(vi) English Literature and language with a study of European civilization.

The four immediate needs are :—

(i) A Chair of Islamic Culture.

(ii) A Chair of Zoroastrian Culture.

(iii) A Chair of Ancient Indian Philosophy.

(iv) A Chair of Jain Culture.

It should be noted, that while students, who wish to take the equivalent of a University course, are freely welcomed to Visvabharati, yet the students chiefly required are those who are eager and ready to give their lives to scholarship and learning. Such scholars will receive the most careful personal tuition and individual attention in their studies. Since they are attracted from every part of India, and also from the West, it is found by experience that they are by no means few in number. Already some, who are likely to make a mark in India in the future, and to uphold the repute of Indian learning in the larger world, have joined the Asram.

The roll of students and teachers at Santiniketan Asram is roughly as follows :—

School Department	185
Visvabharati	50
Teachers and Professors	28

One of the most important characteristics of Visvabharati is the Library, which has received gifts and benefactions from many sources and has been very richly endowed by the poet himself. Having regard to its origin and development, it is one of the most remarkable libraries in India at the present

time. The students of Visvabharati have all the privileges of the free daily use of this Library and they find in it the centre of their own reading and study.

Terms of Admission.

The terms of admission and monthly payment at Santiniketan have been kept as low as possible. They are as follows :—

Admission fee	Rs.	20
School monthly fee	„	23
Visvabharati monthly fee ..	„	26

The admission fee is paid once only. The monthly fee is all inclusive. It covers board, lodging, tuition, medical aid, washing, etc. The diet provided for the students in the school and in Visvabharati is a simple vegetarian diet, which all partake in common. There are two kinds of food prepared, suitable for students, who prefer either a rice diet, as their staple food, or a mixed diet of rice and wheat.

By far the most pressing need, at present, is to provide accommodation and hospitality for those guests, who are now coming in increasing numbers from Europe in order to learn and also to teach in Visvabharati.

What is now required.

To sum up this brief account of Visvabharati with a statement of the present requirements :—

For new buildings, especially for the accommodation of those who are now coming from the West ..	1 lakh.
For hospitality expenses and endowment	1 lakh.
For chairs of Zoroastrian, Islamic, and Jain cultures, and a chair of Indian Philosophy. Along with each chair will be a research school, special library and institute. Estimate for the endowment of each chair, together with its library and institute ..	2 lakhs.

While it may be hoped, that the different religious communities will subscribe either the full endowment, or else the yearly income, for the different chairs, the wish is earnestly expressed that generous donations may be immediately given for the most pressing need of hospitality, on behalf of those who come to Santiniketan Asram from the West in the true spirit of reverence and as seekers after truth. The poet, Rabindranath Tagore, is confident that his country will not fail in such a duty of hospitality.

The Banana Fig Industry.

"We observed in a late issue of Tropical Life, London," writes the *Journal of the Jamaica Agricultural Society*, "a treatise on banana figs", giving results of some experiments which had been made. The hope is expressed as follows :—

" We still hope to hear of dried bananas being on sale as freely as desiccated coconut, apple rings, dried prunes, or apricots. To become popular, however, great attention must be given to the appearance and the quality of the fruit, as otherwise, by the time it reaches the actual consumer, it has become dark and almost blackish in appearance and looks far from appetizing."

"This is good advice. As a matter of fact, the making of banana figs at one time was becoming a substantial industry in Jamaica, most of the dried fruit being sent to Germany, but that market was largely spoiled through so many rushing into the trade and sending any kind of dried bananas away, put up in any kind of package. Then the hurricane of 1912 in the West end of Jamaica largely interrupted the trade, then the war came on, then we had three hurricanes in the East end of the island in succession, which destroyed the fruit to a large extent—thus, there have been interruptions to the trade, but through all these years there have always been some banana figs sent away. In 1919 we saw two different brands sold in fruit shops in Glasgow, but we must say they were not attractive in appearance, although they were good to eat. Our trade to a small extent still goes on, there being regular export, but we here in Jamaica could work this up to a fairly substantial industry, as there are a good many driers here made purposely for the manufacture of banana figs, otherwise dehydrated bananas. There has never been lack of the demand. The trouble has been that we have never been able to supply enough of the right kind. For a steady banana fig industry, however, we cannot depend on our commercial bananas, *i.e.*, our tall variety we call the Jamaica banana, as when storm comes the trade goes, and it is necessary to have a steady export to keep up connections. One of the pioneers in the banana fig industry has about twenty-five acres of dwarf bananas as a reserve, and this is a wise precaution."

Industrial Notes from the United States.

By Alfred T. Marks.

Interesting Process Perfected for Delinting Cotton-seed.

Washington, D. C., U. S. A., January 27, 1923.—After a long series of experiments and demonstrations, the United States Department of Agriculture has perfected a cotton-seed delinting process which promises to come into general use throughout the world. The process depends upon the use of gaseous hydrochloric acid, and the government, through the Patent Office, has granted a "public service patent" for the discovery.

As is well known, the delinting of cotton-seed is practised to remove the so-called "fuzz," or short fibres, from the surface of the seed, in order to avoid the clogging of the planting machines, and also to facilitate the prompt germination of the seed.

The agricultural authorities here point out that prompt germination of the seed before the drying of the surface soil has been recognized as desirable in that it aids in securing a more complete stand. Lack of a full stand, it has been found, is one of the serious and general factors in restricting the production of cotton, and is especially serious in a number of the south-western states of the country and in some countries abroad.

Chemical delinting with strong sulphuric acid also is advised by the Department of Agriculture, with the probable advantage of disinfecting the seed as well as removing the fuzz, but no safe and practical process of chemically delinting large quantities of the seed has yet been developed.

The use of gaseous hydrochloric acid avoids the most serious difficulties, however, of the sulphuric acid treatment. Exposure of the dry seed to hydrochloric acid at once disintegrates the lint, so that there is no need of the wetting, washing and drying of the seed that were the serious difficulties of the sulphuric acid treatment. The department reports that inquiries are being received from many foreign countries as to the newly-perfected method, and its operations.

Hemp-handling Machines Creating a Great New Industry.

Although hemp has been grown in the United States for many years for its fibre, its cultivation on a large scale is practically a new domestic industry which promises to take an important place among American manufacturers. The stimulation has been brought about by the development of new and extremely efficient machinery for harvesting, breaking and "scutching" the long stems of this useful annual.

As a crop, the action of hemp on the soil is reported as being especially kindly, as it returns some sixty per cent of the mineral values, its roots penetrate deeply, and it is a natural weed eradicator.

The process of handling resembles that of flax, but on a coarser scale. The stalks, cut cleanly and laid in windrows by the new harvester, are left for four to ten weeks for the retting effect of the weather, that the fibre may more easily be separated from the rind.

The retted stalks are fed into a braking machine containing twelve pairs of rollers for crushing the rind, the first pair having shallow corrugations, the next four coarse ribs and grooves, and the balance ribs that grow finer and finer until the last pair is smooth. A scraper prevents wrapping around the rollers, and the feed tables at the ends operate automatically. The final separation of the fibre is accomplished by a huge scutching machine, with two cylinders 5 feet 5 inches in diameter and 8 feet long, mounted on a wood frame and truck for portability. Each of the 8 scutching bars carries 20 reversible combing disks graduating from wide to close spacing towards the rear. A two-inch shaft, with three sets of spokes on three hubs, carries the substantial beater bars.

Although not yet in finally completed form the new machines are already at work in many places, some 64,000 acres are sown to hemp, and much other machinery is being designed for converting the 35,000-ton crop into twine, cordage and other products, for which there is always an immense demand.

United States Produced 2,527,000 Autos in 1922.

That statesman who many years ago said that we can only judge the future by the past was right. The past year was a record one in the American motor transportation world, as 2,527,000 cars were manufactured, of which about 2,287,000 were passenger cars and the blance trucks and business vehicles. This represented a gain of about 46 per cent over 1921 and 18 per cent over the previous record year of 1920.

An interesting angle is that the production of closed cars in 1922 was approximately 35 per cent of the total, and if closed bodies had been more available (there being a decided shortage) it is quite probable that the percentage of closed cars would have been higher.

In view of the immense demand and production of motor vehicles one is inclined to wonder what conditions are just ahead us in this country and the world in its transportation requirements. Judging by the past it is probably safe to prophesy that we are on the threshold of an era of better and much more satisfactory transportation conditions, and that these conditions will continually improve. There are in the United States at this writing about 12,000,000 motor vehicles on the highways, which means a much more crowded condition than ever before. There is one automobile to every nine persons in the United States. In other words, with some crowding, there are sufficient facilities to transport the entire population of the country by automobile.

With the increasing number of cars at low prices and with the rapidly-expanding system of boulevards and national high-ways, it is quite probable that this number will be greatly increased in the next five years until we shall have a car for every family in the United States. A conservative estimate by American automotive leaders and organizations forecasts a production of 3,500,000 cars of all kinds in the present year. Of these upward of 250,000 will be exported to various parts of the world.

One-sixth of the World's Live Stock in the U. S. A.

The United States, with only one-sixteenth of the world's population, has one-sixth of the world's live stock. It has one-half of the world's 9,000,000 mules, one-third of the 169,000,000 swine, one-fifth of the 100,000,000 horses, one-seventh of the 492,000,000 cattle, and one-ninth of the 465,000,000 sheep.

As consumers of meat *per capita* we stand fourth in the list of nations, with an average consumption of 164 pounds of meat per person per year. We are exceeded by Argentina with an annual consumption per person of 283 pounds, Australia with 263 pounds, and New Zealand with 213 pounds. Canada follows us closely with 151 pounds and the United Kingdom with 122 pounds. The figures for the United Kingdom are the average of the ten years from 1912 to 1921, while the figures for all other countries are pre-war figures. The meat consumption of a number of other nations, beginning with Germany, which had an average *per capita* figure of 115 pounds before the war, gradually decreases down to 47 for Italy, in the following order: Germany, France, Denmark, Switzerland, Belgium, Netherlands, Greece, Austria-Hungary, Norway, Sweden, Poland, Russia, Spain, Italy.

How America is Working out its Dyestuffs Problem.

The layman, who has casually come into contact with synthetic colour manufacture, concludes instinctively that there must be a great variety of operations involved in an industry that deals with such complex compounds, and yields products whose number runs well into the thousands. The contrary is the case, however. Elementary materials are few in number, and equally few are the chemical and mechanical operations required to transform them into an almost endless variety of shades and tints.

Since the shutting out of the German-made dyestuffs, the United States has had its own problem in the work of producing dyes, and has been remarkably successful. United States manufacturers have had to familiarize themselves with the fact that the evolution of the synthetic colour is of primary importance. This is the accepted analysis and the various stages:

1. Bituminous coal is submitted to destructive distillation.

2. From the volatile products of distillation coal tar is condensed and separated, and a few volatile hydrocarbons are recovered from the current of gas by passage through so-called benzol scrubbers.

3. The coal tar is submitted to fractional distillation. Among nearly 200 distinct chemical compounds present in the tar some eighteen are isolated, possessing more or less value in the synthetic production of colours, medicines, explosives, flavours, perfumes, and photographic developers. This total output is augmented by additions from the benzol scrubbers. Of the small group of useful constituents, of chief importance in the colour industry are benzene, toluene, naphthalene, anthracene, and phenol. The rest, including the three isomeric xylenes, pseudo-cumene, methyl-anthracene, phenanthrene, and the closely-allied carbazole and others play minor though useful roles.

4. The various coal-tar crudes, as these substances are technically termed, after being

carefully purified, undergo complete transformation with treatment by a few chemicals. Through successive operations the chemist produces from them about 300 of the so-called "intermediates." These, with a few exceptions, are not susceptible of direct use in the arts. They serve simply as stepping stones.

5. One or more intermediates are submitted to a chemical reaction, bringing about combination or material alteration in molecular structure. The resultant product undergoes the necessary mechanical treatment—filtering, drying, etc., and constitutes then a commercial product.

American dyestuffs manufacturers find that their knowledge of the exact combined forms in which carbon, hydrogen, oxygen, and nitrogen are present in bituminous coal is limited. Limited, also, is our knowledge of what takes place in a coke oven, as, under the influence of a high temperature, scores of different chemical individuals spring into existence. The initial stage is, therefore, one largely, if not wholly, of a mechanical nature. And the same may be said of the second and third stages connected with the collection, separation and purification of the coal-tar crudes. It is in the fourth and fifth stages that the chemist dominates, and mechanical features assume a purely subordinate position.

In the fourth stage, the manufacture of intermediates, the American manufacturers have encountered their greatest mass of perplexing troubles and difficulties. The German and Swiss concerns engaged in this branch have evidently mastered all of these difficulties, have co-ordinated all the multitude of accessory factors, scientific, chemical, technical and commercial. We have found that herein lay the secret of their ability to dominate the world's trade in artificial dyes.

Through the thorny mazes of this chemical jungle are struggling at this moment hundreds of American coal-tar chemists, but they are determined to achieve as complete a grasp of the complicated industry as their professiona rivals of Europe.

Audions Stronger than the Sun.

The audion, as we all to-day know, has proved to be the real "dark horse" in the radio game, if ever there was any. A simple little glass bulb containing a filament, grid and wing, which began to be used less than a score of years ago, and which at first looked more like a scientific or laboratory toy than anything else for many years, has rapidly come to the front, and now stands in the very front rank of radio devices and accessories. It has not only threatened to supplant, but has actually supplanted in many instances, the usual electro-dynamic and other standard forms of radio equipment, not only for receiving but for transmitting wireless telegraphic signals and telephonic speech.

A short time ago, several hundred audion bulbs connected together, enabled the United States Naval Radio Station at Arlington, Virginia, to hurl the spoken word across the Atlantic from that station to the Eiffel Tower radio station in Paris, France. The words spoken at Arlington were also picked up at Honolulu, Hawaii, and practically every radio station of any size on the North American continent picked up the messages. All of which goes to show what a wonderful device the present day development of the audion really is.

We are now astounded to learn that thirty audions, connected to a telephone cable 1,000 miles in length, are able to amplify perfectly the spoken word, and produce such a tremendous amplification of the voice that the total amplifying power resultant is greater than that which would be produced if all the power radiated by the sun could be applied in the form of a telephone current!

Thus we progress in the remarkable unfoldment of radiophone science.

Suez Canal Improvement.

A correspondent of *L'Agence Latine* states that one of the first developments following the decision to expend 100 million francs over the next ten years upon improvements to the Suez Canal is to be to deepen the canal. It will then have a depth of 32 instead of 31 ft., and as soon as possible it will be increased to 35 ft. The banks are to be 60 metres instead of 45 metres apart. The sea channel at the Port Said end will be correspondingly deepened, the work being rendered more permanent by the extension of the new breakwater so as to prevent sand falling in from the north-east. Progress may not be so quick at the Suez end, between Port Tewfik and the Red Sea, on account of difficulties with the Egyptian Government. The company's contract has not a sufficiently wide scope, and negotiations will be necessary to permit it to undertake the work that is needed to make the entrance to the Red Sea as deep as other parts of the canal system.

Canadian Finance and Trade.

MONTREAL, FEBRUARY 1ST, 1923.—The final estimate of the 1922 wheat crop, which was recently published by the Dominion Bureau of Statistics, places the total yield at slightly less than 400,000,000 bushels. Once more the Dominion has established a record in wheat production, having surpassed her previous record of 1915, by more than six million bushels. The actual figures for 1922 were 399,786,400 bushels, in comparison with 393,542,600 bushels for 1915. According to the Government's estimate, the value of the crop is $339,419,000 as against $242,936,000 for the 1921 crop and an average of $392,542,320 for the five-year period 1917–1921. The respective yields of the other leading wheat producing countries are estimated by the International Institute of Agriculture thus :—

United States	.. 856,211,000	Bushels
British India	.. 366,352,000	,,
Argentina	.. 215,318,833	,,
Australia	.. 105,000,000	,,

PRICES IN CANADA.

While general business conditions throughout the Dominion of Canada have shown very definite improvement during the past year, the return of prosperity, in some of its phases, has been less rapid than the prospects of a year ago indicated. It would seem that certain factors have combined to retard the upward movement of the business cycle. A study of the trend of prices, since the decline began in 1920, offers certain suggestive clues as to some of the factors referred to.

In the natural course of events, a decline in retail prices should follow, after a relatively fixed interval, upon a reduction in wholesale prices. Such a relationship was characteristic of price changes in Canada from the peak in 1920 until sometime in 1921, but from that time onward the co-relation was less apparent. That this is true can be seen from a comparison of the percentage decline in retail and in wholesale prices, based on the indexes prepared by the Department of Labour. While absolute accuracy would preclude the using of percentages of index numbers in this way, the comparison is sufficiently accurate for present purposes.

The only deduction that can be made from the available facts is that there are certain costs affecting retail prices particularly, which either failed to decline to a degree commensurate with the decline in wholesale prices, or which actually increased, during the interval. An examination of the facts shows that such items as rents, labour costs, and the price of coal and of certain building materials, belong to this category. Wages, for example, do not rise as rapidly as prices, on the upswing of the cycle, nor do they decline so quickly in the reaction, particularly in a country where labour is well organized. Rents have continued to increase constantly according to the family budget index number of the Department of Labour, and have shown absolutely no tendency to respond to the fundamental change in basic conditions. As a result of the American coal strikes, the price of coal is another item which prevents living costs from declining, and the cost of certain building materials is still considerably higher than the normal pre-war levels. These prices as well as those of other relatively less important commodities or services, have prevented a decline which should reasonably have been expected, in the cost of living.

The reverse side of the situation leads to an equally interesting conclusion. It will be seen from a survey of the retail price index of the Department of Labour that those prices which were responsible, in the main, for the decrease in living costs which did take place, were the prices of farm products, particularly of potatoes and other vegetables and of dairy products and flour. Reference was recently made in these columns to the fact that the farmer is not yet receiving a price for his products which is commensurate with the prices which he is obliged to pay for manufactured goods. Until there is a better adjustment between the prices of farm products and those of manufactured goods, the purchasing power of an important section of the community will be low and retail buying will suffer accordingly. Eventually the normal relation between wholesale and retail prices must be restored, either by a decline in the prices of those commodities and services whose prices have not yet declined, or by an increase in wholesale prices.

MOVEMENTS OF THE WORLD'S GOLD.

To those who have given the matter careful thought, it must be apparent that normal financial conditions cannot be restored, nor can the pre-war channels and volume of trade be resumed, until the principal countries of

the world resume gold payments. In this connection it is interesting to consider the international movements of gold which have been taking place during recent years.

When the gold standard is in general use throughout the world, the movements of gold are relatively fixed and definite. During the war period and since, however, the economic and financial machinery of the various countries failed to function in the regular manner, and one result of this situation, as is well known, was an abnormal movement of gold to the United States. The quantity of the metal held in the vaults of the Federal Treasury, and of the Federal Reserve Banks and Agents increased from $1,890,656,791 on July 1, 1914 to $3,908,616,985 on December 1, 1922. In the accumulation of this enormous stock, gold was drawn from practically all countries of the world as part settlement for their unfavourable balances of trade. There were, however, certain other countries which succeeded in augmenting their visible gold holdings, partly by concentrating in central reserves, either by patriotic injunction, or otherwise, gold which formerly had been circulated or hoarded, and partly by the increased sale of their goods to foreign countries. It is interesting to recall, in passing, that Sweden and certain other neutrals were obliged, in 1916, to resort to the unusual measure of prohibiting the further importation of gold. The changes which occurred in the gold holdings of some of the chief central banks (the Dominion Government and the Chartered Banks in the case of Canada) between December 31st, 1914 and December 31st, 1922, are shown in the following tabulation :—

	Dec. 31, 1914	Dec. 31, 1922
United States	$827,703,000	$3,200,372,000
United Kingdom	428,221,000	751,841,000
Canada	137,872,000	180,907,000
Spain	110,444,000	487,278,000
Netherlands	83,663,000	233,880,000
Sweden	29,088,000	73,422,000
Argentina	213,906,000	450,057,000
France	802,591,000	708,403,000
Germany	498,508,000	227,437,000

While, as the table indicates, there was a striking increase in the gold holdings of some of the countries, a significant loss of the metal occurred in the case of other countries, and, in general, the primary movement of gold was to the United States. As a result of this movement, that country acquired more than one-third of the world's total, in comparison with about 23 per cent in 1913.

During recent months, however, a definite change has taken place in the movements of the world's gold. The magnitude of the flow to the United States already has been greatly reduced and there are reasons for believing that this reduction will continue. American imports of gold during 1922 were $275,000,000 in comparison with $691,000,000 in 1921, wh le exports last year were slightly above those of the previous year. The net result was that the receipts of gold during 1922 declined by more than $400,000,000 from the 1921 figure. It is quite apparent that a large proportion of the present gold holdings of the United States is not needed in that country, but is urgently required abroad. It is reasonable to suppose that if the normal movement of trade does not induce an outflow of gold from the United States, the attractiveness of foreign securities will do so. When this movement will occur cannot be accurately forecasted, since it depends on the estimate made by the investing public in the United States with regard to the degree of confidence which conditions abroad justify. One may reasonably expect that as soon as the question of British indebtedness to the United States has been disposed of, and when sterling has returned to par, London may furnish the means by which this purchase of foreign securities will be undertaken. Notwithstanding the opportunities for international transactions which occurred during the war and after, it is a well recognized fact that the American investing public have not taken kindly to foreign securities, which, in general, yield high rates of interest but involve risks to which they are not accustomed. It is surely a reasonable assumption that when Britain has put her financial house in order, London may well increase her ability to handle such business by re-borrowing in New York or by realizing on securities which offer less attractive returns, but which are more acceptable to the American investor.

In connection with the above, it is interesting to consider an opinion recently expressed by Secretary Hoover of the United States Bureau of Commerce. The latter, in a recent address, is reported to have given as his view that the international balance of trade was turning increasingly against the United States, and in favour of foreign countries as a group, on account of the growing total of invisible items which are gradually offsetting America's favourable balance of goods. These invisible items include expenses of American travellers

abroad, loans in the United States, home remittances of immigrants, and the payment for such services as banking, insurance and transportation. Mr. Hoover indicated that the net result is a substantial balance against the United States, which was used for the repayment of long-standing loans dating back to the time when there was a net balance in favour of the United States. This process of repaying old loans he believes to be nearing completion, and forecasts that when this has taken place, gold will flow out of the United States.

While our observations have not indicated to us that there is likely to be an immediate pronounced movement in the direction suggested, nevertheless we agree that the situation should tend to adjust itself in the manner set forth. That it must ultimately occur is obvious if we are to assume that in due time the present European financial puzzle is to be solved.

Turning to the currency question, a movement of gold to the countries with greatly depreciated currencies is not so illogical as may appear at first sight. Take for example the case of Germany. It is evident that the mark will, within a short time, lose all purchasing power, unless its decline is arrested. This and other currencies which are in a similar condition cannot completely be stabilized without the intervention of gold. In the event of final repudiation, some other circulating medium must be supplied. It is logical that such a circulating medium should be gold or paper redeemable in gold. It is not probable that the victims of the depreciated mark will quickly forget their experience, and accept as money a currency which is not readily convertible. Within recent times, a precedent in currency depreciation, comparable to that of Germany, was furnished by Mexico whose money depreciated steadily until it became worthless. There was nothing in the Mexican foreign trade situation to justify the expectation of a large influx of gold. Nevertheless gold was imported in sufficient quantities to carry on the normal business of the country.

Newfoundland Paper.

Work is to be begun at once on the Humber River, Newfoundland, preparatory to the erection of an eighteen-million dollar paper plant. The British Treasury has guaranteed $9,000,000 towards the project and Newfoundland the other half. It is understood that Mr. John Powell, Chief Engineer of the Reid Newfoundland Company, will sever his connection with that organization and assume full control of construction.

The plant will be located on the Humber River, at Bay of Islands, on the west coast of Newfoundland, a wide, deep, and rapid stream which, when properly dammed, should provide enormous electric power. For several miles from its mouth it is navigable by ocean-going steamers, and for shipment of produce by water all that is necessary is the erection of suitable piers. During the winter months, when the stream and the Bay of Islands are blocked by heavy ice, shipments can be made *via* Port Aux Basques, which is only six hours' run from Bay of Islands.

Another advantage possessed by the site is that the railway skirts the Humber for upwards of thirty miles, both railway line and stream running through virgin wilderness, rich in spruce and firewoods required for the manufacture of first-class paper. The project was first put forward about a year ago by the Humber Valley Development Company, but the scheme assumed such vast proportions that outside aid had to be sought, with the result that the original promoters merged with the Power Securities Corporation, Limited, of London, incorporated under the British Companies Acts.

An engineer who recently visited the site and discussed the proposal with the business men of the colony said that they were most enthusiastic about the scheme; they realized that the addition of $9,000,000 to their country's liabilities would mean heavy additional taxation, but they were willing to undertake the burden in the belief that in time the colony would reap handsome returns on the investment.

One of the chief problems of the Reid Newfoundland Railway was the cost of coal, every ton of which had to be imported from Canada. Hundreds of thousands of tons were used annually on the long haul between Port Aux Basques and St. John's, the cost of which represented the difference between success and failure in operation. It was possible that the surplus power developed at the Humber plant might be available for the railway, and that complete electrification of the system would be undertaken. The initial cost of installation would be enormous, but he believed that results would justify the expenditure.

Views and Comments.

BY "ECONOMICUS".

The *Khaddar* movement has attracted a good deal of attention in recent years. Apart from its economic or even political side which does not concern us here, there is another aspect which was recently brought out by the Bombay Correspondent of *the Manchester Guardian*. He wrote to his paper :—"*Khaddar* has proved itself to be a cheap and useful kind of cloth, suitable for the country. Probably economy has had more to do with its popularity than anything else. The whole family can be dressed in the one kind of cloth at about one-fifth of what it used to cost them in clothes. *Khaddar* is not only cheap but it wears well and stands the washing of the Indian Dhobi." This is also our view based on observation and experience.

* * *

At the annual meeting of the Manchester Chamber of Commerce, Mr. Clare Lees, its President, said that the whole of Lancashire's fortunes were bound up in the recovery of the Indian market. Of this he considered that five hundred million yards would probably be permanent loss, replaced by Indian production, leaving fifteen hundred million yards which the Indian would buy from Lancashire, if he could afford it. Now, there is a general feeling in certain circles that there is no conflict of interests between Lancashire and India in the case of the cotton trade. The Indian Fiscal Commission, for example, writes in para 311 of its Report :—"The Indian Cotton mills have great natural advantages for the production of the lower counts of yarn and the coarser qualities of piece goods, but in the finer qualities the advantage rests with Lancashire." Granting that the Commission is right in its estimate of the relative advantages of production in England and in India, our view is that the problem is mainly one of prices and not of fineness or coarseness of cloth, and whichever party is able to sell at the cheapest price consistent with durability will, other things being equal, capture the Indian market. The facilities for the production of cotton cloth in India are great and when Indian producers are able to extend heir business, Lancashire is bound to suffer.

Writing recently in *the Manchester Guardian*, its Bombay Correspondent diagnosed the present Indian industrial situation thus :—"The further industrial development of India is played out for the time being. The Fiscal Commission Report has created little interest. When the Commission was appointed there was an industrial boom, but long before it had finished its work the bubble had been burst, and there is now no chance of raising fresh capital for wild-cat schemes." We must confess that we are not in touch with industrial bodies and cannot, therefore, vouch for the accuracy of the statements 'that the further industrial development of India is played out for the time being' and that 'the Fiscal Commission Report has created little interest.' The Correspondent does not tell us how he came to these conclusions, but let there be no mistake about it that Indians to a man feel, albeit they may not express it through the columns of newspapers, that India should develop industrially and the Government should do all it can to set her on her feet again. The reason why there was an 'industrial boom' during the period of the war was that the Indian market was then naturally 'protected' from outside competition and it is this absence of the atmosphere of security and confidence that is responsible for the present hell such as it is. The Correspondent does scant justice to Indian industrialists when he characterizes their enterprizes as "wild-cat schemes." If fresh capital is not forthcoming, the remedy is to provide the facilities as recommended by the Industrial and Fiscal Commissions.

* * *

We are glad to be able to record that the Indian Government has accepted the principle that the fiscal policy of the Government of India may legitimately be directed towards fostering the development of industries in India. The other parts of the Resolution moved by Mr. Innes and passed unanimously by the Legislative Assembly are as follows :—

(1) In the application of the above principle of protection, regard must be had to the financial needs of the country and to the present

dependence of the Government of India on import, export and excise duties for a large part of the revenue ; (2) the principle should be applied with discrimination with due regard to the well-being of the community and the safeguards suggested in paragraph 97 of the Report of the Fiscal Commission ; (3) in order that effect may be given to these recommendations a Tariff Board should be constituted for a period not exceeding one year in the first instance ; such Tariff Board should be purely an investigating and advisory body and should consist of not more than three members one of whom should be a government official but with powers subject to the approval of the Government of India to co-opt other members for particular enquiries. We welcome this announcement in the spirit conveyed by the proverb 'half a loaf is better than no bread,' but we share the view of Mr. Ginwalla, one of the members of the Assembly, who said that he was not impressed with the mere passing of a resolution and that whatever policy was adopted should be vigorously pursued. Mr. Innes, on behalf of the Government, said that his resolution contained a policy which the Government was prepared to carry out in earnest. Let us wait and see.

* * *

During the course of the discussion in the Legislative Assembly, Mr. Innes laid very great emphasis on the burden to the community as a whole and the loss to the agriculturist in particular that a policy of protection will involve. "The agriculturist," he said with confidence, "had least to gain and most to lose by a policy of protection and leaving the question of agriculturists out of consideration one must view with alarm the prospect of substantial rise in prices with grave consequences on social, economic and political conditions." The reasons for these assertions are contained in paras 78 to 81 of the Fiscal Commission Report. "Protection must mean to the agricultural producer," writes the Report, "a higher cost of production, arising partly from the higher cost of the implements that he uses, partly from the higher wages that he will have to pay and partly from the general rise in the cost of living" (para 80). The loss is exaggerated. In the first place, the implements, especially the imported ones, which the ordinary agriculturist uses are not of much value. Secondly, in many cases, especially in the case of food-crops, when the money-wages demanded increase above a certain limit, farmers resort to the old-fashioned method of payment in kind according to the *mamul* rate which is fixed and well known in the countryside. Thirdly, the general rise in the cost of living, if it takes place, will tend to raise the price of agricultural produce as well. Again, if under the cover of protective duties imported commodities continue to flow in, as we must expect during the period of transition, the higher duty will re-imburse the Government Treasury and this extra revenue can be utilized to decrease the burden of the other taxes raised within the country. This reduction will to some extent offset the probable rise in the cost of living brought about by the higher duties.

* * *

Another fear is that protection will raise the cost of living in India. The ordinary needs of the vast majority of the Indian population at present are foodstuffs, house-room, clothing, salt, spices, oil and a few other commodities and luxuries of life. Foodstuffs, building materials, salt and spices are produced within the country and very little is imported in normal years. The rise in the cost of living will result only by a high duty on cotton cloth. It is not denied that India can produce all the clothing she requires out of her raw materials and employing her own labour ; machinery is perhaps to be imported until a thriving engineering industry takes root in India, but it is not likely to be taxed at a very high rate at least at the beginning. An increase in the cost of clothing alone will not send up the cost of living to such an extent as to raise the cost of production in all industries and thus jeopardize India's position in the international market. If, as we believe, the general rise in the cost of living is caused (as Prof. Fisher has shown) by a fall in the value of money, the remedy is to permit the currency in circulation to adjust itself to normal conditions of demand and supply of commodities.

———

The Cane sugar yield for Queensland for the crushing season just closed is estimated at 288,000 tons of raw sugar, the second heaviest yield on record. The total Australian yield for the season should be about 305,000 tons, which will be in excess of the annual consumption. The amount of cane passed through the rollers was approximately 2,194,7000 tons. The record Queensland yield was 307,000 tons in 1917.

Books in Brief.

SHORT REVIEWS OF RECENT BOOKS.

Practical Lessons in Book-keeping.

By T. C. Jackson, B.A., LL.B., and W. Hustwick, A.S.A.A. Published by the University Tutorial Press, Ltd., London, W.C.

That a fifth edition of this book has been called for shows its usefulness. The authors deserve to be congratulated on the eminently satisfactory book they have managed to produce. Considering the size of the book, it is passing strange that it should contain all it does. It is, in one word, a thoroughly comprehensive and accurate practical book on Book-keeping and Accounts generally, including Co-Partnership and Income-tax. The book includes a number of useful forms which enhance its value. The statement of principles deserves praise. We think that this book should be useful not only to students preparing for commercial examinations but also to all others having to do with Company & Partnership accounts. It is handy and cheap for the varied information it contains.

Electricity in Agriculture.

By A. A. Allen, M.I.E.E. Price 2*s.* 6*d.*, Published by Sir Isaac Pitman & Sons.

The tractor is slowly but surely coming into use into India. The necessity, therefore, for a cheap but comprehensive book dealing with the use of electricity in agriculture has been a desideratum. Sir Isaac Pitman & Sons supply this need. Mr. Allen's little book is full of useful information. The uses of electricity in arable, pasture, dairy and poultry farming, horticulture, pumping and irrigation, electroculture and general mechanical and domestic service in farms are treated of in this book. To farmers, agriculturists, horticulturists, supply-station engineers, electrical manufacturers and others it ought to be of great use. The book is fully illustrated, the treatment of topics simple, and the language wholly non-technical. The key-note of the book will be found in this single observation of Mr. Allen: "There is hardly a branch of agriculture in which electricity cannot be employed to advantage." A useful and thoroughly well-written book.

The Great Industrial Problem.

By Walter Howard, F.C.A. Price 6*d.* Published by P. S. King & Son, Ltd., 2 and 4, Great Smith Street, Westminster.

Mr. Howard's plea—a vigorous one—for creating a collective sense among employers and employed puts the case for Mr. Rowntree in an arresting manner. He holds that private enterprise and socialism do not represent two opposing camps; while the capitalist is a trustee for the community, the socialist is the worker for the whole community—not merely for his own good. The development of a true sense of collective responsibility is what is desired. Both are members in the same industrial organism and the illusions attaching to individual rights should, he urges, be done away with. Mr. Howard rightly insists that "the organism depends on the proper development and energy of the workers. The way towards an increase of its efficiency is by the physical, mental and moral improvement of the workers." Mr. Howard deserves praise for his excellently conceived brochure.

Topics in the Journals.

1. The Asiatic Review for Jan. 1923.—
The Indian Labour Problem.

2. The Agricultural Journal, (Vol XVII),—
Availability of the Trichinopoly Phosphatic Nodule as a Manure for Paddy.

3. Welfare (for January 1923).—
Hand-made paper.

4. The Young Men of India for January 1923.—
The Viswabharati Ideal. A Brief History of the Y.M.C.A. in India, Burma and Ceylon.

5. The Journal of the Ministry of Agriculture for January 1923.—
Potato Lifting Machinery.

6. The Educational Review for January 1923..—
The New Tendencies in Education.

7. The Young Men of India (for February 1923)—
The Place of the Voluntary Agencies and the Local Education Authorities in the Education of the Adult in England.

Indian Incomes.

The *Times of India* writes :—

It is frequently that the total income per head of the population of India is only about two Rupees a month. A different story comes from Indore, where the State Census Officer, Mr. N. S. Rahalkar, has made some interesting investigations on the subject. He shows that in Indore city the average income per head is between Rs. 119 and Rs. 120 a year and that in the districts it ranges from Rs. 30.97 to Rs. 37.76. The average annual income of the subjects of the State as a whole he gives as something over Rs. 42 per head. An official calculation in Lord Curzon's day gave the average income per head throughout India at Rs. 36.1 per annum, but Mr. Rahalkar shows that the Director of Statistics now reckons it to be Rs. 53 per head. This is approximately the same as the calculated average income of the inhabitants of Turkey, a much colder country, which is returned at the equivalent of £4—say, Rs. 60—a year, In Russia the normal average annual income is stated to be £11. In Italy it is £12. And so we go on up to £40 in Australia and £60 in Spain. But the fact that the Spanish average is returned as £60, while that of Holland is given as £22 and that of the United States as £39, shows the danger of comparing the figures by themselves as they stand and without allowing for the numerous conditions of life which the people earning the incomes have to face.

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The Mysore Economic Journal

A Monthly Periodical devoted to the Discussion
of all Economic Topics of Interest

Vol. IX MAY 1923 No. 5

Population and Food Supply in India.

By P. P. Pillai, B.A., B.L., F.R.Econ.S.

The periodic occurrence of famines with their attendant horrors and miseries has always been one of the misfortunes to which India has been subject; and the economic crisis of 1918–19 when she sustained the worst crop failure recorded since the famine of 1901, and the rise in the price of food grains that accompanied it have once again brought into prominence the adequacy of the food supply of the country. It is true that India to-day possesses in her Famine organization perhaps the most efficient weapon that human ingenuity can devise to combat shortage of food in any particular locality; but the very success of that organization depends on the existence, somewhere in the country, of adequate stores of grain ready to be moved into the stricken area, while a marked effect of railway extension has been a growing tendency to prevent the accumulation of such stock in the more fertile regions by providing increased marketing conveniences. Famine officers will therefore find it more and more difficult to obtain ready stores of surplus produce even in the most fertile tracts; so that the question to be now considered is whether the food production of India is such as to satisfy first, the ordinary needs of the country, and secondly, to make up for a deficiency in some particular area in times of distress.

The provision of an adequate food supply is a primary condition of the existence of mankind, and the great growth of population in India makes the problem more serious. Some of the more thoughtful observers of Indian conditions have been greatly alarmed by the fast rate at which the population is sometimes overtaking the food supply. Even in normal times, according to Sir William Hunter, one-fifth of the total population goes through life on insufficient food.* "The people of India are very poor" says he "because the population has increased at such a rate as to outstrip in some parts the food producing powers of the land; because every square mile of Bengal has now to support three times as many families as it had to support a hundred years ago; because every square mile of British India, deducting the outlying Provinces of Burma and Assam, has to feed nearly three times as many mouths as another square mile of the Native States."* Another student of Indian conditions, Sir Henry Maine, expresses the fear that in no country will there be probably a severer pressure of population on food. India is the only part of the world where every single male of the population is married as soon as it is possible for him to be married, and that irrespective of means and in defiance of every economic law. The begetting of offspring is there considered a religious duty,† and so the number of unmarried adults forms only a microscopic proportion to the total adult population.‡ Of the well-known checks of the growth of population, war and rapine have disappeared under British rule, and pestilence and famine are being deprived of their maleficient powers, "and with their disappearance," continues

* ("England's work in India" pp. 79-80.)

* (*Ibid.* p. 127.)

† [See the derivation of the word Putra (=son) in Manu, IX, 138.]

‡ Of the total population of 315 millions in 1911, 49 per cent of the males and 34 per cent of the females are unmarried; 46 per cent of the males, 48 per cent of the females are married, whilst the rest represent the percentages of the widowed population. Of the 49 per cent of the total male papulation that is unmarried, 75 per cent are under the age of 15 while an equal proportion of the total female unmarried population is under the age of 10. At the reproductive age-period (15 to 40) the proportion drops down to 6 per cent for the unmarried female population. See Mr. P. K. Wattal's "The Population Problem in India," pp. 3-4.

Maine, "population will fast increase its volume, forcing on the attention of the rulers of India a number of grave problems which have been very imperfectly faced of late by the economists and politicians of the West."* Readers of the chapter on Vital Statistics in the Imperial Gazetteer of India† can obtain a glimpse of the terrible struggle for a bare subsistence in which the vast majority of the population are almost continuously engaged. It is there estimated that out of the 232 millions in British India, there are at any one time about 28 millions suffering from all causes, most of them traceable to bad or insufficient food. The census figures for the last five decades show the rate of increase in population :—

(British India including Native States).

1881	253,793,514
1891	287,314;671
1901	294,361,056
1911	315,156,396
1921	319,075,132

Allowing for some differences in calculation, the increase from 1891 to 1901 was 1.5%, from 1901 to 1911 6.5% and from 1911 to 1921 only 1.2%. The alarming fall in 1911–1921 is thus explained in a Government Resolution.‡ "The influenza epidemic of 1918 dominates all the other direct influences on the movement of the population during the decade. The epidemic left no part of India unvisited. The death rate was nearly double that of the previous year and the direct loss of life due to the ravages of the disease during a few months in 1918 alone is put at about 7 millions in British India, while the indirect effects are shown in the heavy fall in the birth rate in 1919, the births being less than the deaths in both 1918 and 1919. Apart from the influenza epidemic, the latter years of the decade were generally unhealthy. Plague which had been virulent in 1915 in the Northern and Western portions of the country again took a heavy toll in 1917 and 1918. The general failure of the rains of 1918 caused widespread distress over a large part of the country, and the mortality from cholera in 1918–1919 was exceptionally high. In the last year of the decade, a large part of the country had to face a serious failure of the monsoon." The catalogue of disasters here detailed is capable of application, with some alterations, to each one of the decades from 1881. Of the plague alone, it has been asserted that prior to 1911, it has been responsible for a greater loss of life in India than that cuased in the whole of Europe by the Black Death ;* figures of mortality recorded show an average of 34.28 per mile for the five years 1907–11, and the ratio of infant mortality in the city of Bombay alone in 1911 stood so high as 382.5 per thousand. Rapid as the rate of increase already is, it is evident from the foregoing that with a more efficient Public Health organization, it would be even more rapid.

Is the food supply able to keep pace with this increase in the number of mouths to be fed ? In examining this question we shall confine ourselves to a study of the figures relating to the food grains of India, not only because they constitute by far the most important, if not, indeed in many cases the only food materials in India, but also because we are not yet in a position to obtain reliable figures regarding the amount of food material obtainable from other minor sources. The religious scruples of many prevent them from breeding or killing animals for food, so that no great harm will be done by neglecting that item altogether. In 1880, the Famine Commission calculated that there was in British India a population of 181,350,000, a food crop area of 166,250,000 acres and a food outturn of about 51.5 million tons, out of which 38 million tons were actually consumed as food, 3.5 millions used for seed purposes, 3.1 millions used as cattle food, 2.6 millions wasted, thus leaving an annual balance of 4.3 million tons.† It was therefore argued that India produces enough to feed her millions in normal times and that the accumulation of the annual surplus will enable her to provide for famines when they appear in their periodic order of once every eleven and a half years. But in a Note of Dissent Messrs. Caird and Sullivan challenged both their figures and their conclusions. "We are unable" said they, "to concur in the statement that India as a whole, how produced and is likely long to produce sufficient food for its

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* (See pp. 518-521, "The Reign of Queen Victoria" Vol. I.)

† (1907 Edition. Vol. I. Chap. X.)

‡ [No. 40 Government of India, Educational (census) 5th April 1921, para 3.]

* Lovat Fraser. "India under Curzon and After" p. 267, also Vol. I of Datta's Report on the enquiry into theRise of Prices in India. p. 26.)

† (Report Vol, I, p. 50.)

population in any season of drought. The prolonged teachings of the past are wholly against such a conclusion. Population is increasing, the price of food is rising, the production of it as shown by experts scarcely advances, whilst as the number of the landless class who depend on wages is constantly growing, the supply of labour in the absence of industries other than agriculture must soon exceed the demand." After a painstaking and elaborate examination of the period 1890–1912, Mr. K. L. Datta who conducted the enquiry into the rise of Prices in India, concluded that the population in British India excluding Burma showed more than a proportionate increase to the area under cultivation, the area under food grains or the total production of food grains; and that it is the increased production of Burma which has counter-balanced to a large extent the shortage in British India proper. His index numbers for the total supply of food grains in British India and Burma as compared with the population are :—

* AVERAGE OF THE QUINQUENNIUM.

	1890-95	1895-900	1900-05	05-10	10-12
Population	100	101·8	104·5	106·3	109·2
Production of food grains.	190	99	107	103	113

Examining the period 1909–1919, we find that the total area under food grains in British India was, in thousands of acres :—

1909–10	2,03,664	1912–13	2,01,373
1910–11	2,04,103	1913–14	1,91,573
1911–12	1,95,097	1914–15	2,04,505
1915–16	2,03,735	1917–18	2,07,437
1916–17	2,08,773	1918–19	1,77,771

These figures are taken from the Agricultural statistics for British India for 1918–19 (Published 1921) and represent the nearest possible approach to accuracy, and the charges in the cropped area as shown therein, with a shrinkage in 1911–14, a marked expansion in the later war-period 1916–18, and an abrupt contraction in 1918–19 are sufficiently correct for our purposes.

The population of British India during this period, as calculated from the vital statistics at pages 204–205 of the statistical abstract for British India (comd. 1425, 1921) was:—

1911–12	24,58,37,701	1915–16	25,47,25,153
1912–13	24,80,06,006	1916–17	25,66,41,000
1913–14	25,05,44,211	1917–18	25,82,16,517
1914–15	25,28,35,740	1918–19	25,19,51,276

The following table compares the growth of the population with the extension of general cultivation and of the cultivation of food-grains.

	1911-12	1912-13	1913-14	1914-15	1915-16	1916-17	1917-18	1918-19
Population (in millions) ...	246	248	251	253	255	257	258	252
Index No.	100	100.8	102	102.8	103.7	104.4	104.9	102.44
Total cropped area (in million acres)	216	224	219	228	222	230	228	201
Total area under food Index No.	100	103.7	101.38	105.5	102.7	106.5	105.5	93.06
Total area under food grains (in million acres)	195	201	192	205	204	209	207	178
Index No.	100	103.07	98.46	105.13	104.6	107.18	106.15	91.28

By the end of 1919, therefore, the growth of population had outstripped the growth both of the area under all kinds of cultivation as well as of the area under food crops. But leaving 1918–19 aside as an abnormal year, we find that the general trend has been for the acreage under crops to keep peace with the growth of population, so that putting it at its best the general food position of the country has tended to remain the same and has been unable to show any improvement in 1880.

Let us now try to ascertain what was the annual average of food production during 1909–1919. The table appended gives the acreage under the various food grains for the year noted against it.

The Agricultural Statistics for 1918–1919 also give us figures showing the average yield

*(See Datta's Report on Rise of Prices Vol. I, p.59.)

(IN THOUSANDS OF ACRES.)

Year	Rice	Wheat	Barley	Jawar	Bajra	Ragi	Maize	Gram	Other grains and pulses.
1909—10 ..	78,731	22,770	8,105	21,802	16,303	4,545	6,858	13,153	31,397
1910—11 ..	78,524	24,398	7,840	21,184	15,540	4,289	6,312	13,946	32,070
1911—12 ..	76,637	25,025	8,433	18,386	13,093	4,296	5,591	14,129	29,597
1912—13 ..	78,752	23,681	7,420	20,968	16,866	4,456	6,316	12,423	30,908
1913—14 ..	76,908	22,685	7,206	21,405	15,385	4,371	6,167	9,297	28,149
1914—15 ..	77,660	25,651	7,905	21,228	16,042	4,251	6,188	14,364	31,412
1915—16 ..	78,670	23,871	8,013	23,051	14,342	4,338	6,735	13,559	31,145
1916—17 ..	80,988	25,044	7,972	21,892	15,228	4,072	6,544	15,699	31,334
1917—18 ..	80,668	26,428	8,505	21,118	12,699	4,266	6,486	16,724	30,544
1918—19 ..	77,538	19,148	6,464	20,540	11,201	4,004	6,063	7,647	25,166
Arithmetic annual average for the period	78,509.4	23,868.1	7,786.3	21,516.9	14,610.4	4,288.7	6,326.0	13,094.1	30,316.2

in pounds (lbs.) per acre of the principal cultivated crops. These figures are the result of numerous carefully conducted crop-cutting experiments during the quinquennium just preceding their publication and represent with the nearest approach to accuracy standards of the outturn which may be expected in a year with average agricultural conditions. The latest figures for the average yield of food grains are :—

	lbs. per acre.		lbs. per acre.
Rice ..	1,062	Ragi ..	1,059
Wheat ..	830	Maize ..	1,025
Barley ..	1,047	Gram ..	720
Jawar ..	797	Other grains	
Bajra ..	502	and pulses	C. 855

From the annual averages of the area and the yield, we obtain the following figures showing the average food production per year during the period :—

	(in lbs.)
Rice	83,38,19,82,800
Wheat	19,80,65,23,000
Barley	36,59,56,100
Jawar	16,86,20,49,300
Bajra	7,33,44,20,800
Ragi	4,54,17,33,300
Maize	6,48,41,50,000
Gram	9,42,77,52,000
Others	25,78,95,36,000
Total ..	1,73,99,41,03,300

or = 7,76,75,942.5 Tons.

The calls on this stock of food grain may be classified under two heads : (1) internal consumption as human and cattle food, and as seed-grain and (2) the external demand of the export trade. Of these the second is easily disposed of ; the *net* *export of grain from India (there are no imports of food grains to speak of) in the ten years ended 1918 is said to have averaged about 1.5 million tons per annum.† But the factors which make up the first head present some difficulty. With what degree of certainty can we fix the requirements of seed-grain, and human and cattle food ? Even here working on the information available we may form some idea of the quantities required. On the strength of his experience of agricultural conditions while Collector of Coimbatore, Sir F. A. Nicholson has calculated that "80 to 100 lbs. of seed rice per acre were used in the transplanting process, on the 87,000 acres of rice land in the District no less than 3,100 tons of seed were used.‡ The common method of sowing in India, however, is broad casting, and the peasants exercise even less economy with the less costly seeds such as the sorghums, so that 100 lbs. of seed per acre will not be an over calculation. For an average of about 200 million acres, this comes to about 9 million tons. Deducting the

* The Annual Statement of the Sea-borne Trade of Br. India, Vol. I (No. 1552 of 1922) gives the following figures of exports and imports of grain, pulse and flour.

Exports (*p. 46*).	Total in	1913-14 in Tons	4,195,000
		1917-18 ,,	4,514,000
		1918-19 ,,	3,248,000
		1919-20 ,,	878,000
		1920-21 ,,	1,487,000
Imports (*p. 24*).		1916-17 ,,	12,160
		1917-18 ,,	4,395
		1918-19 ,,	59,482
		1919-20 ,,	167,446
		1920-21 ,,	2,287

† (See page 137, East India Progress and condition H. of C. 202 of Session 1921.)

‡ (P. 43 Dr. Voelcker's "Report on the Improvement of Indian Agriculture".) See also Wood's "Note book of Agricultural Facts," Madras Govt. Press p. 52.

quantities for export and seed purposes from a total supply of about 77.5 million tons, we have a balance of 67 million tons available as food for a population which even in such a wholly calamitous year as 1919 numbered 252 millions. Accepting the Famine Commission's estimate of 1½ lbs. of the meal or flour of the common grains of the country per head per diem,* as sufficient in ordinary times (the food scale for a man doing hard labour in jail is more than this, and consists of 25 oz. of flour, 6 oz. of vegetables, ½ oz. of oil and 2 oz. of condiment), the present supply will feed a population of 252 million for a year, and leave a balance of 5 million tons which is obviously too insignificant to last the people till the next harvest time and to meet the demands for cattle food. All these calculations are based on the assumption—which is notoriously untrue that there will be an absolutely fair and equal distribution of the food among the people, and absolutely no wastage. As a matter of fact, all but the poorest classes both use and waste more than their normal share, thus depriving the residum of their all-too-meagre *quantum*. And in passing it may be noted that excepting the handful of the very wealthy in the country, there does not appear to be any wide gulf of difference between the earnings of the poorer and the richer classes. Thus Mr. J. C. Jack in his analysis of the economic conditions of Faridpur estimates that, of the agricultural families comprising 77% of the total population of the District, only 49.5% are living in comfort, the rest being classified, according to varying degrees of penury, as living below comfort (28.5%), above want (18%), and in want (40%)† ;while of the degree of "Comfort" enjoyed by 49.5% of these families each consisting of five members, it is enough to say that their total income is only thirty Rupees per month.‡

I have already pointed out that the period under investigation has shown in general, a parallelism between the increase of population and the extension of the area under food-crops. Presumably, then, the food supply has remained fairly constant, and in striking contrast to the multiplication and intensity of the various progressive forces during the last thirty years, the proportion of "the hungry flock who look up and are not fed" to the total population has remained the same. This chronic under-feeding is in itself a great evil ; but an even greater is the consequent sapping of national virility and stamina. It often involves a lower rate of wages and everywhere depresses the moral and physical character, and so forms a potent source of poverty,* it is the basis upon which is built the resigned pessimism and quiet melancholy which characterise the religious and the mental outlook of the people, and which seem to breed over the landscape and infect the atmosphere.† The non-expansion of the food supply keeps the ordinary margin of subsistence narrower in India than perhaps any other country and leaves it exposed to the dangers Ricardo has so graphically described. "In those countries" said he "where the labouring classes have the fewest wants and are contented with the cheapest food, the people are exposed to the greatest vicissitudes and miseries. They have no place of refuge from calamity ; they cannot seek safety in a lower station ; they are already so low that they can fall no lower. On any deficiency in the chief article of their subsistence, there are few substitutes of which they can avail themselves, and dearth to them is attended with almost the evils of famine." How true this warning, but the history of the successive famines in India attest.

A greater abundance of food supply, then will prevent chronic starvation and increase the resistant powers of the people in times of general scarcity ; and the tendencies in modern India are clearly in that direction. With the extension of scientific cultivation, dry-farming and the use of improved seeds, heavier yields per acre may be looked for ; and the industrial Renaissance of which we are now witnessing the early dawn, is undoubtedly increasing the production and therefore the purchasing power, of the country. But a gradual increase in productive capacity will be more than nullified by an increase in the population ; the thousands who now die of starvation or

* (See Famine Commission of 1880, Report Vol. I. p. 59.)

† (P. 82, "Economic Life of a Bengal District", 1916.)

‡ (Compare this with the dietary charges of convicts in the Madras jails in 1919 which alone came to Rs. 65-1-0 (over Pounds 4) per head. See the Madras Jails Administration Report for 1919, para 29. This will explain how it is that the Indian Factory Labour Commission of 1908 found that the convict in jail enjoyed better health and weighed more than the factory operative. See Ap. C to their Report.)

* (Imperial Gazetteer, Vol. I., pp. 515, 516.)

† (Sir T. W. Holderness "Peoples and Problems of India" p. 144.)

of other preventible ills, will live and multiply, and the new wealth of the country will be absorbed in providing them with food. What is, therefore, needed is a sudden spurt in productive activity, to be kept up for some appreciable length of time. Besides finding sufficient food for the people such a rapid expansion in production will have another far-reaching effect—it will tend to create a higher standard of living which in turn will keep the population in check. A recent writer on the Population Problem* re-enunciates the doctrine that when a community becomes aware of the fact that their standard of living will decline with an increase in their numbers beyond a certain figure, they will take measures to prevent that increase. Where, however, the determination to maintain the standard of living is not strongly manifested, there over-population may occur. Thus in England and in all industrial centres, there is at the bottom of the social scale a thriftless, unskilled, and casually employed class in which the limitation of families is little, if at all, practised. In India where the wants and hopes of the people are limited to the barest necessities of human life, prudential considerations as to the limitation of families fail to operate, because prudence could effect no sensible amelioration, and because life is already so miserable that the prospect of a still lower stage possesses but few terrors.† This is proved by the fact the pressure in India is increasing where it is already greatest, *viz.*, among the poorer cultivators and agricultural labourers.‡ The adoption of a higher standard of living, with ample and adequate food as its principal factor, may in course of time produce conditions forcing the Indian to a recognition of his optimum figure, and of the necessity of keeping to it if national vigour and efficiency are to be preserved unimpaired. An urgent need of India to-day is more food, less mouths. It will, however, be futile to look to the soil alone for a remedy to the situation. It may be easily conceded that the scope for improvement in Indian agriculture is practically unlimited, and that its productive powers are as a matter of fact increasing every day, owing to the application of science and organization to farming. But it is the productiveness of industry, even more than the arts of improved cultivation, that has helped to maintain the rapidly growing populations of other countries in increasing strength and efficiency, and it is to that source of relief that India has now to turn her attention.

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* (A. M. Carr-Saunders : "The Population Problem" Clarendon Press, 1922 ; pp. 289-290.)

† (See Sir H. S. Cunningham ; British India and its rulers, 1881, page 56.)

‡ See Imperial Gazetteer for India, Vol. 3, p. 477. It would be instructive to know what, in Mr. Carr-Saunders opinion, are the causes of the over-population in countries like India. At pp. 276-277 of his recent book, he says : "What, then, is the cause of the over-population which almost certainly exists in parts of India and China? The irregularity of the factors of elimination (war, disease, famine, etc.), is itself no bar to the adjustment of population, but this irregularity may indirectly have an important bearing upon the outlook of man, and ultimately on the behaviour of the mass of the population. Great scourges must tend to produce a hopelessness of outlook. When, time and again, war and disease sweep through country, there must arise a tendency for the standard of comfort to be lost sight of. Gradually there may come about a condition of things when there is no hope or fear .....That which is common to these races, where over-population is suspected, is the absence of hope and fear alike of ambition and of a standard of living ; they are contented to subsist on what will just support life. Such conditions are fatal to the attainment of the desirable number."

There are two kinds of bamboo, reports the "Australasian Manufacturer," which are used for the manufacture of paper in China : Tzu Chu and the Chin Chu. These must be tender stems (usually of the same year's growth), and in no case must they be more than two years old. They are cut into lengths of eight Chinese feet, to suit the size of the concrete pit in which they are steeped in bundles with cold water and heavily weighted with stones. After three months they are removed, and well washed. They are then stacked in layers, each layer being well sprinkled with lime and water containing two pounds of soda to every 100 pounds of lime. After two months the fibres are well separated, the lime is then washed out, and they are steamed for 15 days with three pounds of soda each 100 pounds of fibrous mass which on removal from the steamer is thoroughly rinsed with cold water. It is then placed in a concrete pit and reduced to fine pulp with wooden rakes. Then it is ready for conversion into paper. The paper produced is much finer, whiter, thinner, and more expensive than ordinary straw paper. There may be various qualities, fine writing paper, or paper for windows. A very tough and flexible paper is made from the inner bark of a species of mulberry tree, and this paper is much in use for the inner lining of padded garments.

Agriculture in the U.P., 1921-22.

By "Rusticus".

There is little that is novel in Dr. Leake's Report on the work of the Department in the United Provinces for 1921-22. His Report is reassuring on one point. At this time, when Local Governments are all suffering from acute financial stringency, it is satisfactory to find that the Government of the United Provinces, unlike that of one of its neighbours, does not regard its Agricultural Department as a useless luxury. The development of the Department is proceeding, not, it is true, as rapidly as it would if the financial outlook were brighter, and no cheese-paring economy is being brought to bear on it. We cannot but think that the true remedy for India's financial ills is to be found in a bold policy of agricultural and industrial development. Such a policy would, no doubt, have to be financed on borrowed money but India's credit is still good and we are optimistic enough to believe that it will remain so. This, however, is hardly the place for a discussion of its possibilities and we must return to the more prosaic task of commenting briefly on the agricultural activities of the United Provinces last year. As an earnest of what is to happen when conditions improve, an Expert Agriculturist and an Economic Botanist for work on cotton have been added to the superior staff. The first of these appointments has been filled by the transfer of Mr. C. Maya Das from the Central Provinces and, for the first time since the reorganization of 1914, the Agricultural Section of the Cawnpore College is in charge of an officer who can devote his whole time to it. The second appointment, which is an outcome of the recommendations of the Indian Cotton Committee, has yet to be filled. This, however, is due to no fault of the Local Government but to the failure of the candidate selected to take up the post. At present, the United Provinces are divided into four unwieldy agricultural circles. Rohilkhand will be separated from the Western Circle during the current year and the organization of Bundelkhand into a separate circle, another recommendation of the Indian Cotton Committee, is actively proceeding. The Rohilkhand Circle is to be placed in charge of Mr. Clarke, recently Agricultural Chemist and then Officiating Director of Agriculture. This important sugarcane area could not be in better hands for Mr. Clarke, who was a most active and useful member of the Indian Sugar Committee, will now have an excellent opportunity, of which we are sure he will make full use, of putting the recommendations of that Committee into practice. Even with the formation of these two new circles, the Province will still be some distance from the ultimate aim of ten circles and ten Deputy Directors but, with things as they are, it is most encouraging to all who have the interests of Indian Agriculture at heart that new circles should be formed at all just now.

Dr. Leake repeats the clear statement made by Mr. Clarke last year of the objects the Department has in view in its scheme for the establishment of experimental farms at the headquarters of each circle, district or demonstration farms, research and seed farms and, as the scheme is one which should serve as a model throughout India, we cannot do better than follow his example. The experimental farm is intended to establish the suitability of new methods and new varieties to the varying conditions of soil and climate which are found in the ten definite agricultural tracts which will constitute the ten circles. The district farms will illustrate the practical value of the new methods and new varieties found suitable to the local conditions on the experimental farms and to these will be applied the test that they should show a profit. The last link in this chain will be demonstration on the cultivators' own fields. The research farms will provide the research officers of the Department with the means of testing their conclusions under their own control before they are put into practice on the experimental farms. Finally, the seed farms will be used in special cases where there is necessity for maintaining purity of bulk of seed before distribution. Since these farms will be run on a sound agricultural basis and will be expected to show a profit they only differ from demonstration farms in that they are established for a particular purpose.

The work done by the Department on the principal crops presents no new features. Thus, as regards cotton, the seed distributed by the Department continued to be that of CA9, the Cawnpore American strain, JN1, the improved strain of Bundelkhand cotton, and K22, one of the strains bred by Dr. Leake himself. The United Provinces Department

of Agriculture has still to make up its mind whether to throw in its lot with the advocates of short staple cotton or with those of long, or rather of longer, stapled varieties. In favour of the long staple is the fact that the mills of the Province now use almost exclusively a type of cotton which the Province does not produce. They have, therefore, to import cotton whilst the local cotton has to find its market elsewhere. This, as Dr. Leake points out is uneconomic, is merely on account of the unnecessary pressure on the railways. In favour of the short staple is the fact that the demand for it still continues and that the cultivator still reaps a richer reward for it than for the better qualities which the Department has now placed within his reach. Dr. Leake evidently thinks that everything depends upon whether this demand for the shorter staple cottons will continue and looks for the solution of the problem to the Indian Central Cotton Committee. But we cannot agree that the problem lies entirely without the Province. The Agricultural Department must continue its efforts to discover better varieties which will give the cultivator an outturn sufficient, when combined with the enhanced price he gets for the better quality, to wean him from his short stapled varieties.

There is, we are glad to say, no dead level of uniformity in the reports of the Agricultural Departments in India. Each Provincial Report has its own distinctive feature and that of the United Provinces Report is its discussion of general problems. Thus, for example, Dr. Leake has some interesting comments on the problem of assistance to the public which in these zamindari provinces differs very materially from the problem presented by ryotwari provinces such as Madras or Bombay. The Taluk Associations which are about to be formed in Bombay would not, in Dr. Leake's opinion, meet the needs of the United Provinces. In the latter, especially in Oudh, the large estates which exist, form most admirable potential units for organization. Some measure of the extent to which the land is held by large landholders is given by the census figures which show the number of non-cultivating zamindars as half a million. It is obvious that, if the agricultural development of the Provinces is to proceed at all rapidly, the landed class must, as Dr. Leake says, retrace its steps and re-establish personal contact with its estates. How is this to be done? The Agricultural College is doing its best. It is gradually attracting men from the estates and is fitting them to return and take an active part in the management of their lands. Every student who thus returns, provided he retains touch with the Department, can influence a considerable area. In order to do so, he must, of course, have a farm of sufficient size to give ample scope for the employment of new methods. Power pumping, power threshing and so on must be an economic proposition. Where this is so, the landlord is in a position to assist his tenantry, to teach them better methods and to enter into partnership with them in the marketing of produce. But, as Dr. Leake wisely points out, landlords must remember that their farms are something more than areas in which crops are grown for their material benefit and which offer an object lesson for their tenantry to gaze at. Behind better crops there is almost always a certain, even though small, capital expenditure which the tenant cannot afford. Here the wise landlord can give assistance, as can co-operation, and, Dr. Leake adds, it is only by assistance in such directions, by an extension of the landlord's influence beyond the boundaries of his actual farm that the enterprise now appearing will benefit to the full its authors and the country. That landlords in the United Provinces are realizing their responsibilities more and more is shown by the increase in the number of private farms during the year from 202 to 300. Not all of these are of economic size and the cost of machinery and implements has militated against the establishment of more of them. Rai Bahadur L. C. Sharma, the Deputy Director of Agriculture of the Eastern Circle, has always some interesting details to give of the working of these farms. Of the 32 shown in the list appended to his report, only six worked at a loss and this was due, in almost every case, to excessive rain, which damaged the monsoon crops and prevented the preparation of the land for the cold weather crops. The largest return was Rs. 2,666 on a farm of 196 acres, irrigated by means of a pumping-plant lent by the Agricultural Department, 76 acres of which were under Pusa 12 wheat. But the net profit of 44.3 per cent on the capital invested on this farm was small as compared with that of 271 per cent on another farm of 50 acres, of 236 per cent on one of 25 acres and of 153 per cent on one of 100 acres.

Dr. Leake, as we have said, deals in his Report with general questions and is content to leave the details of the Departmental

work to the appendices. There is much to be said for this procedure though it is perhaps carried to too great a length and hardly tends to bring out the progress which is being made, especially that in demonstration work. The reader has to examine the individual reports of the Departmental officers in order to discover, for example, that 1164 demonstrations on cultivators' lands, mostly of the advantages of growing improved strains of wheat, barley and gram, were carried out in the Eastern Circle and that, in the Central Circle, a staff of 46 men paid 3929 visits in order to demonstrate the advantages of growing improved strains of wheat in 688 villages, of cotton in 609 villages, of other crops on 4675 acres in a number of villages not specified, of green manuring in 77 villages and of the use of lever harrows, cultivators and ploughs in 305 villages. The number of improved implements sold in the Central Circle during the year, in spite of high prices, was 1936, of which 903 were ploughs, and it is obvious that both here and throughout the Provinces, the scale on which improved implements are now in use must be telling most beneficially on agricultural practice. In this connection, Dr. Leake mentions that the iron inverting plough is not a substitute for the country plough. The progressive cultivator must add it to his equipment and the price of it must, therefore, represent an additional outlay. In the Western Circle, Mr. Prabhakar is endeavouring to evolve a cheap and simple implement which can be converted at will into a country plough, an inverting plough and a cultivator for interculture. If he succeeds in doing so, he will do much to foster the cultivation in lines of such crops as cotton by which a material increase in yield will be combined with a saving of labour. The Indian Cotton Committee were, it may be remembered, very insistent on the advantages of sowing cotton in lines.

In conclusion, a few words must be said about agricultural education in the United Provinces. The four years course at the Agricultural College which was designed especially to appeal to the young zamindar, to give him a good education and, at the same time, to fit him to return to take an active part in the administration of his estates, is becoming increasingly popular. The two years course which aims at giving a practical training to the smaller zamindar or substantial ryot has always been popular since its inception in 1914. It has now been decided to affiliate the Cawnpore College to the Allahabad University. It is evident that Dr. Leake is not entirely happy about this. He points out in the first instance, that a large number of the younger generation of landholders who would benefit themselves and the country by taking the courses now given are not qualified for admission to the University. In working out the scheme for affiliation, he proposes to overcome this difficulty by making provision for the continuance of the diploma course. In the second instance, he does not altogether like the separation of the research and teaching staff involved in the decision. He holds, what we regard as the sound view, that, if research in some form is a valuable asset to the teacher, teaching is none the less valuable to the research worker. He therefore, hopes that the separation will not preclude the teaching officers from research and that, on the other hand, the affiliation of the College to the University will not mean a complete severance between the research officers and the College. It will be interesting to see to what extent he is able to ensure that his views are carried into practice. The third necessity arising out of the affiliation is the closing or removal from the College of the two years course. Such a course, will, in future, be given, at the Bulandshahr Agricultural School, but the appeal of that school is local whereas the Cawnpore College meets the needs of the whole Province. Logically, therefore, there must be several such schools scattered throughout the Province. This is a development to which Dr. Leake looks forward with confidence but it is also a development which, like so many others, cannot be expected until more funds are available.

Before the war, Paris possessed quite a number of what might almost be called official beggars, who, by dint of standing mutely in the same place day after day and year after year, had become familiar figures and acquired a sort of *clientele* among the charitably disposed. The Pont des Arts had its blind man, who would have been greatly surprised and aggrieved had any rival ventured to enter his domain, and every church porch had its recognized *pauvres*, tolerated on condition that they never asked for alms. Now-a-days, one occasionally sees some pitiable specimen of humanity sitting in a corridor of the tube railways, but the street beggars have become very few and far between. It may be that the high cost of living has dried up the founts of indiscriminate alms-giving and compelled the beggars to work.

The Economic Outlook in the United States.

By Virgil Jordan.

The general economic situation in the United States at the end of the year has puzzling and surprising features. In the first place, it appears to be a fact not widely realized in business circles, that industrial activity toward the end of the year was fast approaching a level equal to that of the peak of the boom of 1919-20. The basis for this largely unexpected situation is somewhat mysterious, since the export market has not greatly improved, and foreign trade measured in volume of tonnage cleared has remained at levels lower than last year. The improvement in the domestic market must have been considerable to have given rise to sufficient demand to explain the tremendous rise of industrial production, but wages have not risen enough to imply increased purchasing power, and prices have been moving upward for some time.

A reflection of this anomalous condition is to be seen in the fact that general business lags considerably behind industrial activity. Retail and wholesale trade have not improved to the extent one might expect from looking at the volume of manufacturing. It is likely either that the industrial spurt will be short lived or that the upward wage movement of the past seven months must continue if general business is to catch up with production. Such figures for December, as are available, indicate that industrial activity is already slumping slightly, having apparently outrun the demand. For instance, for the month of November, the unfilled orders on the books of the United States Steel Corporation showed a slight decrease below those for October indicating that the output of steel products is catching up with demand.

In view of these facts, it is not surprising that business circles have not any tremendous amount of certainty about the future and are rather taking advantage of what the situation offers without indulging too much in optimistic speculations.

The high level of industrial activity is indicated in the production of steel ingots which during October and November reached the highest points since the beginning of 1921, and six per cent in advance of 1913. This industry is now closer to complete recovery from the after-war depression than it is in other countries. The entire steel industry is now at about eighty per cent capacity. Every month in the past year except February and November showed increases in the unfilled orders of the United States Steel Corporation.

The building industry has contributed greatly to the rise in industrial activity, the six months preceding October showing the greatest activity in the history of the industry in the United States. The automobile industry continues at a high state of activity in spite of the usual seasonal let-up. There appears to be no dropping off of the demand for automobiles. The woollen and worsted industry showed substantial improvement in the past few months, and are operating at about eighty-six per cent of capacity. Copper production is at about 66⅔ per cent of capacity, and total consumption is more than one-third greater than before the war. The tobacco industry is showing high production records in some branches, particularly cigarette-manufacturing. The production of paper has been increasing almost continuously since the middle of 1921, and in November reached almost the capacity of the industry, being only about three per cent less than at the peak in 1920. During almost the whole year preceding July, 1922, domestic consumption of oil was below production, but recently has caught up with output. In August, domestic consumption of oil reached the highest point in the history of the country. The only industries showing little or no improvement are the silk and leather industries. Railroad car loadings have reached almost record breaking figures, and commercial failures have decreased.

Wages have been rising since April in many industries, due partly to increased demand for labour. It is questionable, however, whether there is or has been any widespread labour shortage such as has been generally ascribed to the effect of the immigration restriction law, except in certain seasonal occupations like building and farming. Along with rising wages, however, the cost of living appears to be moving upward again, and it is doubtful whether the wage increases will be large enough to support any quick sound expansion of business.

The factors which are retarding general business and which contribute to the lack of confidence in the permanence of the high level of industry are the shortage of transportation and the increasing difficulties of the

railroad situation, the shortage of coal, the new political situation, and the new problems of foreign relations raised by the reparations question and the European situation.

The car shortage of the present is unprecedented in American railroad history, being more than three times as large as in any past years. It is due largely to the growth in the volume of business, combined with the general deterioration of railroad equipment, particularly due to the railroad strike, which still continues to affect the railroads more than they admit. So serious has this and other aspects of the railroad situation become that it may be said to constitute to the gravest national problem to-day, and one of the biggest the new Congress will probably deal with.

Coal production lags below previous years, and is inadequate, in view of transportation conditions, to supply the need. In consequence there is widespread distress among domestic users of coal, though the industries appear to be adequately supplied.

The developments in Congress as a result of the past election are a source of considerable anxiety in business circles, who expect to be pestered greatly during the coming year by radical legislative proposals affecting immigration, taxation, the railroads and unionism. There is little doubt that there are growing up in Congress and in the public new points of view on fundamental economic issues, and the next few years may prove to be a period of class conflict and political agitation likely to disturb the even tenor of business progress which has been indicated in the past year.

The European situation is another, and the largest, uncertain factor in the economic outlook. It is sure that the United States has apparently made up its mind to get along somehow without a large export trade, but even if this attitude could stand for long the strain of large industrial productivity, it is doubtful whether indifference, or watchful waiting could weather any great economic collapse in Europe such as has been feared in recent weeks. Recognition of this fact in large part explains the pressure being brought to bear on the Harding administration to alter its policy in this regard. The goings and comings of the American ambassadors recently indicate in some measure a realization that the economic outlook of the United States is bound up with that of Europe.

Sulphur Production.

The small extent to which sulphur is obtained and brought to commercial account within the Empire is remarkable. Small quantities are obtained from sulphur-rock in parts of India, Canada, New Zealand, Australia, and South Africa; but they are far from sufficient to meet the needs of those countries, all of which, as well as the United Kingdom, are importers.

The world's production is roughly 1,500,000 tons a year. The chief source of supply is the United States, which has a productive capacity of 2,000,000 tons annually. It is obtained almost entirely from the Gulf coast regions, chiefly from the Eastern Texas and Western Louisiana. Italy ranks second among the sulphur-producing countries of the world, her output exceeding 250,000 metric tons per year. Japan has become an important producer, and from her India obtains practically all her supplies. Spain, Austria, France, and Chile also have supplies, but they are not sufficient to make them important exporting countries.

Discussing the subject in No. 28 of the "Bulletins of Indian Industries and Labour" (Calcutta: Government of India Press, 6 as.), Mr. Cyril Fox, of the Geological Survey of India, states that the largest known occurrence of sulphur in India is the deposit being worked in the Kachhi District of the Kalat State in Baluchistan. The calculated sulphur reserves there are small. So far no great deposits of pyrite have been discovered in India. There are, however, enormous quantities of zinc-blende, associated with the lead-ores of the Bawdwin mines of Upper Burma. The project for establishing a large scale production of sulphuric acid from these sulphide ores has been abandoned for various reasons. It, therefore, seems that, for some years, India must continue to import both sulphur and sulphuric acid for her needs.

The manufacture of sulphuric acid is most important in connexion with the development of manufacturing industries. It is estimated that an average of 18,000 tons of sulphuric acid is now being manufactured in India. Practically the whole of this acid is made from sulphur imported from Italy, Japan, and the United States. It is hoped that the question of the utilization of the zinc-blende concentrates from the Bawdwin mines will be reopened. It is thought that various economies may be obtained by smelting the Bawdwin ores in conjunction with the production of spelter, sulphuric acid, and zinc pigments.

Co-operation in Bihar and Orissa, 1921-22.

By "Viator".

It is a somewhat chequered picture that Khan Bahadur Mohi-ud-din Ahmed draws of the progress of co-operation in Bihar and Orissa in 1921–22. The bright spots in the picture are such features as the substantial material and moral improvement in the condition of members of co-operative societies, the educational, medical and agricultural activities of the societies and the satisfactory working of grain golas. The dark spots are the increase in the amount of overdue loans, the increase in the number of applications to the Registrar by central banks and societies for the grant of awards for wilful default in the payment of kists, the unsatisfactory working of many of the stores and the hostile attitude of landlords. Before commenting briefly on both bright and dark spots, it may be well to give the usual statistical figures of progress. The number of societies of all kinds increased from 3,580 to 4,261, agricultural societies contributing 614 of the increase of 681. The membership of the societies rose by 23,478 to 1,36,541, of whom 1,12,421 are members of agricultural societies. Working capital increased by Rs. 42.7 lakhs to Rs. 165.6 lakhs, reserve funds by Rs. 2.2 lakhs to Rs. 11.5 lakhs and deposits by Rs. 14.5 lakhs to Rs. 63.1 lakhs, in spite of a fall in the deposits by members of agricultural societies which is attributed to such causes as bad harvests, marriages and destruction of houses by fire.

Khan Bahadur Mohi-ud-din Ahmed dwells with not unnatural enthusiasm on the material and moral "uplift" which co-operation has brought in its train. On the material side, the most direct gain has been the saving in interest. This he estimates for last year at a total of about Rs. 7.5 lakhs for the Province, the difference between the 15⅝ per cent charged by the societies and the 24 per cent which would have been levied by mahajans. We cannot, however, refrain from pointing out that even 15⅝ per cent is an extraordinarily high rate of interest and that the co-operative movement in Bihar and Orissa can hardly be considered to have fulfilled its essential function until it gets it down at least to somewhere in the neighbourhood of 10 per cent. The figures given in the Report show, however, that loans obtained even at this very high rate can be turned to very good purpose in redeeming lands, acquiring new holdings and buying cattle. The borrower knows exactly where he stands in relation to his society. He is never sure of his position in regard to the mahajan and it is this uncertainty which checks all enterprise. On the moral side, one wonders whether some societies do not look at the results of their operations through spectacles of too roseate a hue. It is, for example, a very extensive claim which is made by the Dilarpur East Society that ruinous litigation and improvident borrowing are no longer to be seen in the area it serves. Human nature hardly changes as rapidly as that. And, whilst the efforts of the members of co-operative societies to check excessive drinking, gambling and litigation are deserving of all sympathy, the zeal for the reformation of one's neighbours has its own peculiar dangers as England in the Puritan and Reformation times bears witness. None the less, this zeal is evidence of an enthusiastic belief in the virtues of co-operation and without enthusiasm there can be no progress. It is for those at the head of affairs to see that the enthusiasm is guided into right channels. There can be nothing but approval for the action taken to expel undesirable members of co-operative societies when efforts to reform them have failed.

Again, there can be nothing but approval for the activities in regard to education, medical aid and agriculture. Central banks in Bihar and Orissa have now started 354 schools and pathasalas. Khan Bahadur Mohi-ud-din Ahmed complains that the District Boards have not given these the support they should have. It is impossible to judge of the justice of this complaint without knowledge of the other claims on the District Board funds but it is, at any rate, satisfactory that the help given by the District Boards last year was greater than in the previous year. In Bhadrak and Sitamarhi, the central banks took prompt steps to cope with epidemics of cholera by engaging doctors, disinfecting wells and persuading the people to take simple measures of precaution. As the Government review suggests, there is a most promising field for co-operation between the District Boards and co-operative societies in the provision of education and medical relief.

Co-operative societies in Bihar and Orissa appear to be more than usually active in pro-

moting the adoption of agricultural improvements. Groundnut has been introduced by them in various localities with satisfactory results, the cultivation of better varieties of sugarcane is being popularized as is also that of Pusa 12 wheat, whilst Pusa R 4 wheat, one of the latest Pusa varieties has been introduced by two central banks. Cotton, Dahia paddy, and jute are other crops to which attention has been paid whilst a number of societies are instructing their members in the advantages of using good manures. We are very glad to see that Khan Bahadur Mohi-ud-din Ahmed realizes to the full the necessity for the closest touch between the Agricultural and Co-operative Departments in this branch of the latter's activities. It is mentioned that cotton did not thrive in the Puri area for lack of irrigation facilities. This was, surely, a point in regard to which the Agricultural Department should have been able to give a word of warning. Uninstructed attempts on the part of co-operative societies to introduce new crops or new methods are worse than useless, they are positively harmful. But, as Khan Bahadur Mohi-ud-din Ahmed points out, if the Agricultural Department is to help the co-operative societies, it must have more Deputy Directors and as many inspectors and fieldmen as possible. In ordinary circumstance, this statement would have been a mere platitude. In the present circumstances of Bihar and Orissa, it is not. We earnestly trust that the members of the Legislative Council of that Province will take due notice of this expression of the views of an experienced Indian official, and will cease to regard the Agricultural Department as their most promising field for retrenchment.

Although grain golas are not peculiar to Bihar and Orissa, there are, we believe, far more of them in that Province than in any other part of India. The number last year increased from 31 to 72 but 13 have yet to start work. Their object, as described by the Registrar, is to conserve grain and, by so doing, to fight scarcity and famine. Conditions in Angul in 1919 would have been very different had these golas then been in existence in that tract. In that year, there was no seed paddy to be obtained anywhere in the neighbourhood and it could only be got from Sambalpur and the Native States at famine prices. In the early days of the famine, the local dealers would only lend it at cent per cent interest and, subsequently, not even at that rate. The takavi loans obtained from Government had to be used for maintenance. Now the Angul tract has 34 golas with a membership of 6,839. 10,374 maunds of paddy were received last year, of which 6,626 maunds were lent out. 5,063 maunds being repaid. Angul can now await a recurrence of famine conditions, if not with equanimity, at any rate without grave apprehension.

Khan Bahadur Mohi-ud-din Ahmed does not dwell over much on the question of collections and his omission to do so is, in our view, the least satisfactory feature of his Report. He merely states that the total collections of central banks were 63 per cent of the demand. He does not give the percentage for agricultural and non-agricultural societies and for the actual figures the reader has to turn to the tabular statements at the end of the Report. He considers the percentage of collections by the central banks fairly satisfactory in view of the fact that the members of societies in many areas were really not in a position to pay owing to causes beyond their control, such as floods in Orissa, the successive failures of crops in various parts of the Province, the fall in prices and litigation under the Bengal Tenancy Act. The statements show that of Rs. 53.4 lakhs due to agricultural societies from individual members, Rs. 14.5 lakhs are overdue. There is no cause for discouragement about this for, though there was an increase of some Rs. 3½ lakhs in the arrears, there was only a very slight increase in the percentage outstanding. The figures for non-agricultural societies are not so satisfactory. Here there was an increase of Rs. 3.1 lakhs in the amount due from individuals and of Rs. 1.13 lakhs in the amount overdue. The percentage of arrears increased from 10 to 18. This question of collections is obviously of very special importance in a Province where the rate of interest charged is as high as it is in Bihar and Orissa. Arrears on loans lent at 15⅝ per cent have an unfortunate way of piling up with great rapidity. It is doubtless the realization of this by the societies which has led to the increase in the number of applications made to the Registrar by central banks and societies for the grant of awards under Section 43(1) of the Co-operative Societies Act, for wilful default in the payment of kists. Last year these numbered 449 against 385 the previous year. As Khan Bahadur Mohi-ud-din Ahmed says, if a co-operative society is to inculcate thrift, it must enforce the punctual realization of its dues. Therefore, for some time to come, an increase in the

number of applications for awards may only mean that central banks and societies are becoming more alive to their duties.

Both central banks and agricultural societies appear, on the whole, to have worked well. The percentage of central banks classed as bad and hopeless slightly diminished whilst the larger fall in the percentage classed as average was more than set off by the increase in the percentage classed as model and good. It is difficult to make out from the Report exactly how non-agricultural societies are faring. The frequent mention of amalgamation and liquidation seems to show that most of them are not doing too well. The fishermen's societies which were started in Orissa last year are promising. An interesting new society is that which has been formed for the Pans of Bhadrak, an "untouchable" class and one which is reputed to consist of habitual thieves. They naturally have no assets and no one will trust them with money. A small sum has now been advanced to them for the purchase of goats and poultry which multiply rapidly and the society has made a good start. The stores societies in Bihar and Orissa can hardly be regarded as bright stars in the co-operative firmament. Failures are reported to be numerous, the causes assigned by the Registrar being lack of efficient management, lack of loyalty in the individual member, starting on too small a scale, operating on too small a margin, too much interference by the directors, payment of dividends on shares instead of the grant of rebates and defects in account keeping. It is a formidable list. We commend to the Khan Bahadur's notice M. Gide's recent book on Consumers' Co-operation which was reviewed in these columns a short time ago and which will well repay his careful study.

The attitude of the Bihar and Orissa Legislative Council towards the Provincial Agricultural Department shows that the Province can scarcely claim to be regarded as progressive. On a par with it, is the attitude of the majority of the landlords towards the co-operative movement. With a few honourable exceptions, the landlords, if not actively hostile, are apathetic and fail to realize that they have any interest in the improvement in the economic well-being of their tenants. This is exceedingly unwise for, as these tenants become more and more aware of the weapons which the Reforms have placed in their hands, the wheel will undoubtedly turn full circle. Their misdeeds will be remembered against them and the full penalty for them will be exacted.

In conclusion, a word must be said about the Guarantee Unions. These increased during the year from 79 to 92. The rate of progress is not as rapid as the Registrar could wish, for the societies still regard the Unions as mysterious organizations and have not the corporate sense sufficiently developed to be willing to guarantee the loans of other societies. The result is, that, although there are 3,861 agricultural societies and 261 non-agricultural societies in the Province, only 698 are affiliated to the Unions. The offer by some central banks of a lower rate of interest to Union societies when they make punctual repayments should do much to inculcate that sense of the mutual interests of societies which it is the object of the Unions to foster and which is, indeed, the essence of co-operation.

Various palms occurring in the tropics yield a sugary sap which is employed by the natives for making sugar and "toddy," and a summary of information relating specially to the Nipa palm from this point of view is given in the current number of the "Bulletin of the Imperial Institute". This palm grows commonly in the muddy estuaries of rivers throughout the Eastern tropics, and is exploited particularly in the Philippine Islands. The sugary juice or "tuba" is obtained by removing the flowering shoot and collecting the juice which escapes from the cut surface. By repeatedly cutting the end of the stalk the flow of juice can be maintained for two or three months, each stalk yielding about 9 or 10 gallons of juice during this period. The juice contains about 15 per cent of sugar, which can be extracted by means somewhat similar to those used in the manufacture of cane sugar, or if desired, the juice can be fermented for the production of alcohol. It has been estimated that 28 cwts. of sugar or 200 gallons of 95 per cent alcohol could be obtained annually from an acre of swamp land planted with Nipa palms. The tree occurs over extensive areas in British North Borneo, and the authorities there are considering the question of utilizing it as a source of sugar and alcohol, whilst it would appear that there are also possibilities of its being similarly utilized in Malaya.

Practical Education.

By S. Subbarama Aiyar, M.A., Senior Lecturer in Economics, Christian College, Madras.

The old problem of reconciling learning and earning has assumed an altogether new shape not only among the *alumni* but among the educational institutions themselves. It is notorious that modern education on English lines was originally designed—and still maintains its traditions—to prepare boys to take up some Government employments or the so-called liberal professions. The supply has outrun the demand and the pressure for employment is so great that there is a natural revulsion of feeling among the parents, teachers as well as students against perpetuating a blind alley system of training and education. At the same time the cost of education has gone up enormously that the institutions find it increasingly difficult to maintain themselves and provide adequate facilities to meet the increasing demand for education. With "the democratization" of education, the problem of imparting true culture together with the necessary training of the hand and the head to enable the recipient to earn an honest livelihood has a new force and a meaning and it is time therefore that educationalists tried to design a system that will satisfy the demand of the hour.

It is satisfactory to be told that a propaganda to this effect is being carried on by the Calcutta University on the initiative of Capt. J. W. Petavel, the University Lecturer on the Poverty Problem. "The problem of unemployment," writes Capt. Petavel in a pamphlet issued under his name (Middle Class Unemployment and Practical Education) "will be put on the way to final solution, and much poverty will be relieved at once, when, taking advantage of modern methods that allow great use to be made of unskilled workers, we employ school children and students, for a considerable part of their time, providing things for their own use and for use in their homes. In that way they will soon earn, or rather save appreciably; they will be brought up to be practical, and the educational industrial organization will form the basis of a co-operative organization that will be able to solve the whole problem of unemployment."

The same ideal is held up before us by Dr. Rabindranath Tagore. "Education should not be dragged out of its native element, the life-current of the people," declared the poet in an address which he recently delivered in Poona. "Economic life covers the whole width of the fundamental basis of society, because its necessities are the simplest and the most universal.:.....The idea of economic co-operation should be made the basis of a University; it should not only instruct, but live; not only think, but produce. It must co-operate with the villages round it, cultivate land, breed cattle, spin cloths, press oil from oil-seeds; it must produce all the necessaries, devising the best means, using the best materials, and calling science to its aid."

"In speaking of combination of education and industry," writes Capt. Petavel in the pamphlet referred to above, "we are speaking of things we have some experience of. In our Polytechnic Institute we have begun to put into practice the plan of making partnership arrangements with industrialists..... The Indian Polytechnic Association, of which Sir Asutosh Mukerjee is patron and Raja Reshee Case Law president of the Committee, has been formed specially to encourage such arrangements."

The idea of "an educational colony," according to Capt. Petavel, "is to teach school children systematically and scientifically to cultivate the land by modern methods, and produce the more valuable kind of crops, vegetables and fruits, that are used in every home and to work in the many industries that combine naturally with cultivation.....Town boys should be taken to schools outside the towns, and, if possible, to sleep alternate nights, getting their schooling and practical training, in which agriculture would play a great part... This plan might be carried out gradually, first taking school boys in rotation a certain number of times weekly."

The idea of an educational colony in this sense is quite congenial to the Indian temperament. It is quite a common custom in India, especially South India, for pious people to endow lands to temples which used to serve until recently as centres of not only worship but of culture as well. Every village must have its own school, primary and secondary, where besides the three R's, gardening, cultivation and minor industries must be taught to the boys in the farms or workshops attached to the school. The income should be allowed to be appropriated by the teachers and the students, leaving a cretain portion to the

general funds of the school.

The advantages of the scheme are numerous. In the words of Capt. Petavel, "school masters under these conditions have the opportunity of developing into half industrialists or agriculturists and half teachers; they would then not only be well off economically, but also have wide prospects to look out upon, and would undoubtedly have a much better influence on the boys than discontented men with no prospects, dragging wearily through a long day of teaching." The boys would not have to sacrifice manual training and, after the course is over, can find independent employments for themselves.

"It would be as advantageous for colleges as for schools," writes Capt. Petavel, "to have their country branches; it would be more advantageous often, because many college students come from country districts, and take lodgings in the University town, and it would be better for them, ffom the combined points of view of health, practical training, and economy, if they could reside most of their time with their professors, in country branches of their colleges, coming to the town perhaps only for very few days in the week, for some special lectures and for their examinations."

The plan is quite attractive and deserves to be tried in every educational centre in India.

The Empire Motor Fuels Committee of the Imperial Motor Transport Council, London, has published an interim report outlining the researches carried out by the Engineering Sub-Committee into the behaviour of alcohol as a motor fuel. As alcohol of 95 per cent absolute strength by volume was the strongest that could be produced commercially, this was the fuel used, and the government allowed it to be employed without denaturing so that the experimental results should not be vitiated by the presence of denaturants. The experiments were divided into four series, covering all practicable ranges of mixture strength, piston speed, compression ratio and temperature. Subsequent experiments were carried out with 90 per cent and 99 per cent alcohol. The conclusions of the sub-committee, of which Dr. W. R. Ormandy is chairman, generally confirm what has been found by other experimenters with regard to alcohol fuel, namely that the thermal efficiency obtainable with alcohol is higher at all compression ratios than with either patrol or benzol. It is considered that the following points have been definitely proved: (1) That alcohol can be employed from the low compression employed on paraffin engines up to a far higher compression than can be used on any petrol; (2) that the thermal efficiency obtained with alcohol is higher than with petrol or benzol; (3) that under all conditions of throttle or mixture alcohol requires the spark more advanced than is the case with petrol or benzol and much more advanced with the weak mixtures; (4) that there was no evidence at any piston speed attained in the engine that the rate of combustion of alcohol under the conditions obtaining was too slow to obtain the maximum effect; (5) that detonation does not occur at compressions up to 8—1 and pre-ignition does not occur at 6—1, even when running for long periods at the highest possible power output of the engine; (6) that there were no evidences whatever of corrosion in the engine; (7) that the power output and efficiency are increased by low temperature of the circulating water; (8) that supplying heat to the carburetter reduced the power output but slightly increased the thermal efficiency; (9) that increase in the water contents up to 10 volumes per cent is an advantage, particularly in very high compression engines. The experiments were carried out on a single cylinder variable compression Ricardo experimental engine, kindly put at the disposal of the committee by the Anglo-Asiatic Petroleum Company, and were assisted by a grant from the Department of Scientific and Industrial Research.

In the course of a recent speech at Calcutta, Lord Inchcape is reported to have said that he wanted "to find out if many offices in India were occupied by functionaries filling up antiquated forms which nobody read—functionaries who were fattening on the industries of the people." We think he will be able to find out some. Further on he remarked that "whereas he received no allowance when he went to Simla to attend the meetings of the Legislative Council, the members now received two first class fares to Simla and back and subsistence allowance." Referring to the currency he alluded to the sale of reverse councils remarking that, after "selling many millions' worth, the Government wisely shut up the shop; he would like to see the profit and loss account of that department." These lines of retrenchment are overdue.

Hindustani Workers on the Pacific Coast.

By Rajani Kanta Das, M.A., M.Sc., Ph.D., Special Agent to U. S. A. Dept. of Labour.

Wages and Income.

The prime object of all production, in fact of practically all industrial activities, is consumption. As consumption is determined by income, a consideration of wages and income is essential in understanding the welfare of a group of people.

1. Basis of Rate Making.

The basis of rate making in both farm operations and lumber mills is the time element. There are, however, quite a few exceptions to this general rule. Even in the lumber mills at Bridal Veil, Oregon, there are quite a number of the Hindustanees at work on a piece basis. They can earn much more at piece work than on a time basis. While piece workers may be few in the lumber industry, the number of such workers in agriculture and horticulture, especially in the latter occupation, is by no means small. In fact, they prefer piece work. In picking fruits or cotton, the general basis of rate making is the piece. For example, the rate of wages for picking 100 trays of grapes was $1.75 in 1920. Similarly they pick peaches and other fruits on a piece basis charging a certain amount for each box.

Contract work is still another basis of rate making. Nothing is so welcome to the Hindustanees as contract work. All those who have been in America long enough to be familiar with the conditions of work prefer to enter into contract work. Generally one of the leading men who has a gang varying in number from 20 to 50 men, will undertake to accomplish a certain amount of work for a certain amount of money. The rate of wages for thinning beet fields, for instance, was fixed at $7.00 per acre in 1920 in the neighbourhood of Brighan City, Utah. Sometimes the picking of grapes or other fruits is contracted for a whole ranch.

The contract is only a modified form of piece work, but there are several reasons why the Hindustanees, in fact all enterprising workmen, prefer it. First, there is an element of speculation in contract work which is stimulating to such instincts as curiosity. Second, there is a certain amount of freedom in the work. They can select their own time of attendance and the number of working hours. Third, it gives them an opportunity for better division of labour and distribution of time. Sometimes they contract for several ranches or orchards in the same neighbourhood and can pick fruits or cotton very economically. Fourth, it is their best chance of making money. Even in the earlier days of their arrival in America they took contracts for clearing land. They are confident that they can get the best of the bargain in contract work. In fact they are most successful financially when working on this basis. Most of their money which they later on invested in different agricultural enterprises, was made in contract work.

2. Time and Mode of Payment.

Since the workers have to depend upon wages for their daily expenses, the time of payment becomes an important item when their welfare is taken into consideration. Payment of wages at a regular time and at short intervals may enable a worker to make his purchases on a cash basis which after all is cheaper than on a credit basis.

The time of payment of wages depends upon both custom and agreement. In Imperial Valley, labourers are paid weekly during the time of harvesting cotton and fortnightly or every month during the rest of the season. Fortnightly payment for both time and piece work is also very common in the agricultural and lumber industry all over the Pacific Coast. This was found to be the case in the lumber mills and logging camps in Oregon and British Columbia. In the harvesting seasons the payment of agricultural labourers is made according to the contract. In piece work all payments are made at definite periods such as a week or fortnight or at the end of the work. But in contract work, the payment is made upon the fulfilment of the contract, although small sums are sometimes advanced at certain stipulated periods.

One of the advantages the Hindustanees enjoy over the Mexican labourers in Southern California is that they can wait for their wages much longer than the Mexican labourers. Most of the Mexican labourers are married and generally have large families with them. They camp on the ranches of their employers. They demand, therefore, the payment of their wages at short intervals such as at the end of each week. The Hindustanees, on the other hand, are usually single and often have money in the bank. When they know their employer they will often leave their wages with him

until the end of the harvesting season.

3. The Rate of Wages.

The Hindustanees are scattered over a vast area of the Pacific Coast and are engaged in several different kinds of work so that their wages and income differ a good deal from place to place and from occupation to occupation. Moreover, there has been a great fluctuation both in wages and income during the last two decades during which they have lived in America. The exact data of the wages and income for the first few years of their residence are not available but a fair idea of the rate of wages for the later years may be had from the following table :—

I. Wages of the Hindustanees from 1906 to 1920.*

Year	Occupation	Rate per hr. in cents.
1906–1907	Railroad or saw-mills	15 to 20
1908–1912	Do	15 to 25
1913–1914	Farm Labour	20 to 25
1915–1916	Do	40 to 60
1917–1918	Do	35 to 40
1919–1920	Do	25 to 30

Table I shows a gradual rise of wages for the Hindustani workers for 15 years. The figures have been collected from representative workers. In the beginning, practically all of the workers were employed on railroads and the wages were more or less uniform for the men in the same gang. The rate varied from $1.50 per day to $2.50 for the first 7 years. As soon as the Hindustanees began working on farms, their wages began to rise. On farms they earned high wages varying from two to three dollars in the years from 1913 to 1916. In 1917 their wages began to rise rapidly when the payment was from 35 to 40 cents per hour. The greatest increase took place, however, in the year 1919 and 1920 when some of the workers were earning 5 to 6 dollars a day.

Due to the depression in industries and the falling of prices, the wages of the Hindustani workers have also fallen in 1921 as compared with previous years. The present rate of wages in agricultural work may be seen from the following table :—

II. Wages of the Hindustanees in Agriculture in 1921.†

Locality	Rate in cents	Remarks.
Brigham City, Utah	35	10 hours.
Loomis, Cal.	40	Fruit growing.
Coluso, Cal.	35—40	Rice Fields.
Stockton, Cal.	30—40	Fruit picking, Irrigating, etc.
Calexico, Cal.	40	Canteloupes.
Marysville, Cal.	30—35	Fruit picking.
El Centro, Cal.	35	General farming Cotton fields.

Table II shows the rate of wages of the Hindustani farm labourers in different localities on the Pacific Coast. Most of the farm workers are located in California and British Columbia, but in the latter province practically all those engaged in agriculture, work for themselves. There are only a few Hindustani farm labourers in such states as Utah and their wages are given separately.

It is seen that the rate of wages in 1921 varied from 30 to 40 cents an hour which, when calculated for a day of 10 hours, would amount to from $3 to $4. Although this rate is lower than that of the previous two years, there is a decided advancement over that of the year 1909, for which the figures are available, as shown below :—

III. Wages of the Hindustani Labourers in Agriculture in 1909.*

No. of Labourers.	Rate in Dollars.
45	From 1 to less than 1.25
104	„ 1.25 „ 1.50
149	„ 1.50 „ 1.75
43	„ 1.75 „ 2.00
28	„ 2.00 „ 2.50
2	„ 2.25 „ 3.00
371	From 1.00 3.00

Table III shows that the rate of wages in agriculture for 371 Hindustanees in 1909 varied from $1 to $3. Those who received $1.75 or over were either piece workers or bosses, while the wages of the average workers in 1921 were $3 or over.

Next to agriculture is the lumber industry which employs a large number of the Hindustanees. The present rate of wages in different localities in this industry is shown below :—

IV. Wages of the Hindustanees in the Lumber Industry, 1921. ||

Location	Rate in Dollars.
Astoria, Ore.†	$3 to $3.40 a day (37.5 to 42.5 per hr.)
Linnton, Ore.†	$3.20 to $4.80 a day. (40 to 60 an hour)
Duncan, B.C.‡	$·40 to ·75 per hr.

* Computed from data supplied by the workers.
† Computed from data supplied by employers.

* Abstract of Report of Immigration Commissioner 1911, 1 : 680.
|| From the data supplied by employers.
† Eight hours work.
‡ Wages for 1920.

Ladysmith, B.C.	$.30 to .40 per hour
Coombs, B.C.	$.27½ to .50 per hour
Vancouver, B.C.	$.26 to .35 per hour

In Table IV is shown the rate of wages of Hindustani workers in the lumber industry on the Pacific Coast. There was a great depression in the lumber industry at the time the rates were collected. In fact, some of the largest mills were partly or wholly shut down. Some of the mills after having been closed for several months had just opened again for business in order "to keep men and machinery going," to use the words of the manager of one of the mills. The rate of wages, therefore, was low in almost all lumber companies in comparison with those paid during previous years. But the variations are easily seen for the different mills.

As a rule, the wages are higher in the United States than in Canada. The hours of work are also shorter in the United States as before stated. The variation in the rate of wages runs from 26 cents at Vancouver, B.C. to 40 cents at Linnton, Ore. The wages for Hindustani labourers at Vancouver, B.C. is very low, like those of other Oriental workers. It is an established policy in some of the mills in Canada to pay lower wages to all Orientals in comparison with Canadians.

4. Comparative Wages.

An interesting feature of the wage system in some of the mills and on some of the ranches under investigation is that it offers a basis for comparison. While it by no means leads to any general conclusion, as the industrial units are so few in number, they at least indicate some tendency in the rate of wages paid to workers of different nationalities.

In the agricultural industry the Hindustanees are sometimes found working side by side with the Americans and the Mexicans. The Hindustani farmers pay higher wages to their own countrymen than to the workers of other nationalities. Mr. Asa Singh, a cotton grower in Imperial Valley, for instance, pay in 1921 $2 a day to the Mexican labourers, $2.25 a day to the American labourers, and $90 a month to the Hindustani labourers. For the same kind of work, the Hindustani rice growers also pay higher wages to their countrymen than to the Americans. Several American ranch owners employ both Hindustani and American labourers. For the same kind of work they pay the same rate of wages to both classes. At a fruit ranch near Fresno, Cal., for instance, the American labourers were paid $2 a day and board, and the Hindustani labourers $3 a day without board. But in special work, such as pruning, irrigating, and picking cotton, the Hindustanees receive higher wages even from American employers.

In the lumber mills of Oregon, Washington, and British Columbia, a large number of Hindustani workers compete with the Chinese, Japanese, American, and Canadian workers. The rate of their wages gives a rough idea of comparison as shown below :—

V. Comparative Wages in the Lumber Industry, 1921.* (In cents).

Location	Chinese	Japanese	Canadians	Hindustanees
Number of employees on which calculations are based ..	90	31	59	90
Vancouver, B.C.	20-22	20-26	30-80	26-35
Coombs, B.C. ..	20-30	25-40	25-80	27-50
Ladysmith, B.C.	25-35	30-40	50-85	30-40
Duncan, B.C.(1921)	30-40	40-60	40-1.00	40-75
Variation ..	20-40	20-26	30-1.00	26-75

Table V shows the rate of wages of Chinese, Japanese, Canadians and Hindustani workers in the lumber industry in British Columbia. The number of men in each group has been found by adding the figures supplied by only four mills. It is seen that the rate of wages runs from 20 to 40 cents in the case of the Chinese, from 20 to 60 cents in the case of Japanese, from 30 cents to one dollar in the case of Canadians and 26 to 75 cents in the case of the Hindustanees. It must be remembered that the lowest and highest wages in each group do not indicate the actual earnings of the group. It shows, however, the highest and the lowest rate of wages for the workers in each group.

As before, the above data are too inadequate to warrant any general statement. But it is seen that first, the wages of the Canadians are higher than those of any other nationality ; second, the wages of the Hindustanees are higher than those of the Chinese and the Japanese ; and third, in the case of the Chinese and Japanese, the rate of wages of the latter are higher than those of the former.

It needs however further explanation. Among the Canadians are grouped such skilled workers as engineers and mechanics who,

* From the data supplied by the Hindustani employers.

according to the Canadian law, cannot be drawn from among the foreigners. They generally receive higher rate of wages. But those Canadians who are employed in the same work as the Hindustanees earn the same rate of wages.

It can, therefore, be said that the rate of wages of the Hindustanees in the lumber industry is higher than those of the Chinese and Japanese and compares favourably with those of the Americans and Canadians.

5. Annual Earnings.

What really concerns workmen is not the rate of wages paid per hour or per day but the amount of yearly income on which he has to live. The rate of wages does not, therefore, really indicate the welfare of a man. This is especially true in the case of labourers in agriculture which is an extremely seasonal industry.

Just what is the amount of annual income of the Hindustani labourer is hard to determine. It varies from year to year and from place to place as would naturally be expected. In Imperial Valley, the gross income of the average Hindustani worker has been put at $800.00 a year. In Fresno County, the San Joaquin Valley and the Sacramento Valley, there were found several farm workers whose annual income was from $800.00 to $1,000.00. The range of income lies between $600.00 and $1,200.00. The average income for the Hindustani farm worker may, therefore, be estimated at $900.00 a year. A decided advance is shown in the annual income of the Hindustanees in the past twelve years. In 1908, the average income of 53 Hindustanees* amounted to $451.00 for an average of 10.2 months in the year. In 1921, the average income had risen to $900.00. In the latter case the working period was from 9 to 10 months, and the average is for the total group of Hindustani farm workers.

The average annual income of the Hindustani workers in lumber and logging industries can be more easily determined from the rate of wages which is more or less steady. Taking 300 working days in the year and the rate of wages in Table III, it may be seen that the rate of wages varies from $780.00 at Fraser Mills to $1,800.00 at Linnton, Oregon. The rate of wages at Duncan, B.C., ranged from 40 to 75 cents an hour last year. In that case the income was as high as $2,250.00. Taking the actual rate of wages paid in 1921 at Fraser Mills, B. C. and at Linnton, Oregon, we find that the average income would amount to the mean sum between $780.00 and $1,800.00, which is $1290.00.

In connection with the income of the Hindustanees as mentioned before, there are several points which must be taken into consideration.

First, although the average income of the Hindustanees has risen from $451.00 in 1908 to $900.00 in 1921, *i.e.*, about one hundred per cent, the prices of food have also risen about one hundred per cent. But the years 1920 and 1921 are rather abnormal. Due to the depression in the agricultural industry the income has decreased. Second, comparing the income of the agricultural industry and the lumber industry, one thing should be remembered, that the workers on farms do not have to pay any rents. Wherever they work they get free accommodations. The mill workers, on the other hand, have to pay some rent although it is not very much. Third, the number of Hindustanees who work on farms for wages is very much limited as mentioned before. Most of them cultivate land for themselves or are engaged in independent business. Even those who do work on farms generally take contract work and their incomes, although indefinite, are generally higher. Moreover, a large number of the farm workers are also farm operators. They have their own farms which they cultivate but when they have nothing else to do they hire themselves out for a short period to other farm operators. The income shown above in the case of agricultural workers or mill workers represents, therefore, only a fraction of the Hindustani workers on the Pacific Coast. The average income of most of the Hindustanees is much higher than $900.00 per year.

* Abstract of Report of the Immigration Commission, 1911, I : 678.

According to the "Dairen Chamber of Commerce Journal," six new cotton mills are being erected in Manchuria. The largest will be situated at Liaoyang, and will have 30,000 spindles. Assuming an average of 20,000 spindles per mill for the remaining five, it is estimated that these factories will have an annual capacity of 107,250 bales of yarn and 2,502,500 pieces of cloth. Comparing these figures with the average annual imports of cotton yarn and cotton cloth through the three ports Antung, Dairen, and Newchwang in the years 1916-1920, the journal says that Manchuria will produce more yarn than she consumes when these factories are in operation.

The Indian Trade in Cotton and Cotton Goods.

The Indian trade in cotton has been considered unsatisfactory from two points of view: (1) that India exports large quantities of cotton in the raw state; (2) that India imports large quantities of cotton manufactures. It is popularly believed that there exists a casual relation between the two and that it is the competition of foreign manufactures which prevents the development of the Indian cotton manufacturing industry. It is also believed among the less informed that England imports in considerable quantities raw cotton from India and returns the same to her with added cost as finished goods. The following table shows the position of India's trade in raw cotton for two quinquenniums before and after the outbreak of the war. The year 1914-15, the year of the outbreak, is left out of the calculation.

TABLE A.—(SHOWING INDIA'S TRADE IN RAW COTTON.)

[*Figures expressed in thousands of cwts.*]

	* Total outturn.	Quantity retained in India.	* Quantity exported.	Share of different countries in the export trade.								
				Japan.	Germany.	Belgium.	Italy.	Austria-Hungary.	France.	Spain.	United Kingdom.	China.
Average for five years ending 1913-14.	15,382	6,785	8,597	3,616	1,252	988	831	598	388	179	439	197
Average for five years ending 1919-20.	15,747	8,283	7,464	5,194	35	98	727	6	175	133	721	215

The above table shows the change in the direction of trade consequent upon the war. Before the war the share of Japan was nearly equal to that of all the countries of continental Europe put together. As a consequence of the war and the stoppage of trade with the principal European countries, her share rose to nearly 70 per cent. In the first period, India retained 44 per cent of her raw cotton; in the second period she retained 53 per cent. Germany, Belgium and Austria-Hungary, which together accounted for 33 per cent of the exports before the war, purchased almost nothing in the five years following the outbreak of the war. The surplus thus created was disposed of by Japan and India increasing their consumption by nearly equal amounts. The absolute quantity taken by the United Kingdom has remained small. In the first period it was 3 per cent of the total outturn and 6 per cent of the exports; in the second period it rose to 5 per cent of the outturn and 9 per cent of the exports.

The temporary phase created by the war is, however, already passing away, and there are signs of a return to pre-war conditions. In 1919-20 for the first time after the war Germany resumed her purchases with the modest amount of 173,000 cwt. and Belgium with 490,000 cwt. In 1920-21 Germany's purchases rose to 720,000 cwt. and Belgium's to 820,000 cwt. In the same year the share of European countries came up to 39.5 per cent and that of Japan fell to 45.4 per cent.

It is difficult accurately to gauge the situation in a period of transition. But looking a little backward and a little forward it is perhaps safe to say that 50 per cent of the total outturn of Indian cotton is manufactured in India, 25 per cent in Japan, 15 per cent in the countries of continental Europe, 3 per cent in the United Kingdom and the rest in China and other parts of the world.

Cotton manufactures can be divided into two main classes: (1) twist and yarn and (2)

* The cotton exported in any particular official year is partly the produce of the same year and partly that of the previous year.

piece-goods. The articles which do not fall into either of these categories are negligible in quantity and value, and may be left out of the account. First, as to the trade in yarn, it is well known that the hand-spinning industry is practically extinct, and the yarn produced in India is almost entirely the product of mills. The following table gives an analysis of the Indian trade in yarn :—

See Table B.

The above table shows that during the five years before the outbreak of the war, imported yarn was only 8 per cent of the total consumption and that during the five years after the outbreak of the war it fell to 5 per cent. It is also clear that in the first five years 30 per cent of the yarn produced in India was exported and in the second five years 20 per cent was exported. The export of Indian yarn in each of the two periods was five times the net imports. The small import of foreign yarn is thus no evidence of a shortage of Indian yarn but of specialization and division of labour. It is well known that the bulk of the Indian yarn is of the coarser qualities below 20 counts and that the imports of yarn (most of which are from Great Britain) are of the finer varieties between 31 and 40 counts. Most of the cotton grown in India has a staple below 1 inch and is thus not suitable for making yarn over 30 counts. The Agricultural Department is hard at work trying to improve the staple and is meeting with success. If the Sukkur-Barrage scheme comes off, it will be possible ten years hence to grow the finest Egyptian cottons in Sind. Up to the present, however, India has grown only short-stapled cotton suitable for coarse yarn. The following table gives an analysis of the different varieties of yarn produced in and imported into India :—

See Table C.

The figures for the import of coarse yarn below 20 counts in the last quinquennium are swelled by the abonormally heavy imports

TABLE B.—(SHOWING INDIAN TRADE IN YARN.)

[*Figures expressed in thousands of lb.*]

	Production of Indian mills.	Exports.	Balance of home production available in India.	Imports.	Re-exports.	Balance of imports available in India.	Total yarn available in India.
Average for five years ending 1913-14.	646,754	192,843	453,911	41,794	925	40,869	494,780
Average for five years ending 1919-20.	662,982	183,836	529,646	28,510	1,494	27,016	494,662

TABLE C.—(SHOWING DIFFERENT QUALITIES OF YARN PRODUCED AND IMPORTED.)

[*Figures expressed in thousands of lb.*]

	Average for five years ending 1913-14.		Average for five years ending 1919-20.	
	Production.	Imports.	Production.	Imports.
Nos. 1—20 ..	478,535	1,375	458,233	2,189
,, 21—30 ..	146,363	4,374	179,535	2,262
,, 31—40 ..	18,699	23,213	20,662	14,202
Above No. 40 ..	2,655	7,602	4,099	5,515
Unspecified descriptions ..	502	5,230	453	4,342
Total .	646,754	41,794	662,982	28,510

from Japan in 1918-19. It is, however, still true that India produces most of the coarse yarn required by her. The competition between Indian and foreign yarn may be said to extend over yarn above 20 counts. The area of competition is thus about 30 per cent of the total range, and in this competition the Indian producer holds his own to the extent of 85 per cent. It is also clear that as we approach the higher counts, India's share decreases and imports preponderate.

Coming now to piece-goods. Table D below gives in round numbers an analysis of the Indian trade in these articles. It is somewhat difficult to arrive at correct figures for the production of cloth on hand-looms and those given below are only approximate. They are arrived at in this way. The available supply of yarn is given in Table B above. Its equivalent in piece-goods is derived by the ratio 1 lb. of yarn $=4\frac{1}{2}$ yards of cloth. The total production of Indian cloth can thus be estimated. From this is subtracted the mill production. The balance is the produce of hand-looms. This estimate, no doubt, leaves room for error first because it takes no account of the difference in quality of the yarn used in mills and on hand-looms, and second because no allowance is made for the amount of yarn used for rope, twine, etc. Sir Vithaldas Thakersay (quoted by Industrial Commission) estimated that 10 per cent of the balance left from mill consumption is used in this way. The actual quantity of cloth woven on hand-looms would therefore probably be something less than the figures given in the table below :—

Indian production during and after the war, shows an increase of 13 per cent over the pre-war production. Net imports show a decrease of 23 per cent. Before the war, the Indian cloth accounted for 46 per cent of the total consumption ; in the quinquennium following the war the percentage rose to 54.

Hand-loom production, however, shows a marked decrease. The researches made by the India Industrial Commission show that in every successive quinquennium after that ending 1900-01 the hand-loom industry has absorbed an increased quantity of yarn. The fall recorded in the five years after the outbreak of the war may probably be explained by the fact that the Indian mill industry greatly increased its consumption of yarn during this period, thus leaving a less quantity for the hand-loom weaver. If this be true, then it will be advantageous to the hand-loom weaver to increase the available supply of yarn in India. It will, however, be a distinct disservice to the weaver to encourage him to weave inferior hand-spun yarn (and thus add one more handicap to the many already existing), while his competitiors, the Indian and Japanese mill owners, use fine mill-spun yarn.

It will be seen from the above enquiry that the bulk of the Indian cloth is woven from

TABLE D.—(SHOWING INDIA'S TRADE IN PIECE-GOODS.)

(*Figures expressed in millions of yards.*)

	Indian mill production.	Indian hand-loom production.	Total Indian production.	Export of Indian piece-goods.	Indian piece-goods available for home consumption.	Imports.	Re-exports.	Foreign piece-goods available in India.	Total piece-goods available in India.
1	2	3	4	5	6	7	8	9	10
Average for five years ending 1913-14.	1,100	1,120	2,220	90	2,130	2,610	60	2,950	*4,680
Average for five years ending 1919-20.	1,760	740	2,500	200	2,300	2,060	90	1,970	*4,270

* In these calculations no allowance has been made for frontier trade. There is a small export trade in piece-goods across the frontier. If accounts were taken of this trade, the figures in column 5 would show a small increase and those in columns 9 and 10 would show a corresponding decrease.

yarn made in India out of Indian cotton. The quantity of cloth made from imported cotton (54,000 cwt.) and imported yarn, (2,701,600 lb.) in the second quinquennium probably did not exceed 150 million yards out of 2,505 million yards produced in India. It has also been shown above that most of the yarn produced from Indian cotton is of coarser kinds below 20 counts. The bulk of the imported cloth, on the other hand, is woven from the finer yarns above 30 counts. In respect of the supply of foreign cloth our chief sources are Great Britain and Japan. So far as the latter country is concerned, there is a considerable supply of coarse cloth such as could be produced from Indian cotton. To this extent there is real competition between Indian and foreign cloth. The bulk of the imports, however, still comes from Great Britain. These cloths are woven from fine yarn made from American and Egyptian cotton. The market for these varieties is distinct and separate from that for the major portion of Indian cloth, and without a great change in relative prices or a great revolution in tastes it is impossible that the demand should be transferred from one market to the other, from the fine to the coarse or vice versa. It is therefore, unlikely that the development of the Indian cotton industry on lines along which it has developed in the past, will materially affect the import of the finer varieties of cloth. On the other hand, the development of the Indian cotton industry ought to check gradually the imports of coarse cotton cloth. The real competition in the manufacture of cotton goods is between India and those countries to which India exports her raw cotton. This competition extends not only over the Indian markets in coarse goods but also over other foreign markets to which those countries supply. In China, the principal foreign market for Indian yarn, we are faced with the competition of Japan, who uses mainly Indian cotton. Again, the principal markets for Indian cloth are Mesopotamia, Arabia, Madagascar and East Africa. Here we have chiefly European competitors (*e.g.*, Germany) who take our cotton and compete with our finished goods. There is no reason why the Indian manufacturer should not capture these markets. A reduction in the exports of raw cotton from India and an increase in the exports of yarn and cloth to foreign markets would thus seem to indicate a healthy development.

There is, however, no anomaly, no question of industrial helplessness in India's importing quantities of fine piece-goods while exporting coarse piece-goods. Such exchange is the evidence of specialization and is the basis of International trade. From the quantity and quality of her production of raw cotton, India enjoys special facilities for the manufacture of coarse cloth for which there is always a large demand in the world's market. It would seem to be to India's advantage to capture this market rather than to supply the relatively small home market in fine goods, which could be done at present only by the import of foreign cotton or foreign yarn.

Fabrics from Cotton-waste.

The principal German textile districts in which cotton-waste manufacturing is carried on are Bavaria, Wurtemburg, Baden, Rhineland, and Westphalia. Many mills turn out cotton-waste fabrics, however, working only part time on such yarns and fabrics. The total number of spindles employed in this industry is not definitely known, but the German Federal Bureau for the Cotton industry (Reichswirtschaftsstelle fuer Baumwolle) estimates the number of mills which work on cotton-waste as 100. It is also stated that 10 to 15 per cent of the total cloth manufactured in Germany is made from cotton-waste.

According to a report by the United States Assistant Commercial Attaché at Berlin, while mule spindles are at present in more general use on cotton-waste, ring spindles seem to be more extensively used in replacements. Plain types of looms, chiefly the four-harness type, are in use; automatic or Jacquard looms are used only to a small extent. The condenser system is employed almost entirely for preparing the waste.

All sorts of cotton-waste materials are consumed by the mills, but linters, sweepings, rags, lap ends, clippings, sliver, and bobbin waste are most common. The principal products made from these wastes are light weight coarse textiles, which are consumed chiefly by the peasant classes of Germany or exported to foreign countries with low foreign exchange rates. Other uses of cotton-waste in Germany are in the manufacture of cheap blankets, felt, cleaning rags, and machinery waste, and a rather large quantity is consumed by paper manufacturers in making paper roofing.

Reconstruction in Europe—II.

By Albert J. Saunders, M.A., F.R.Econ.S., American College, Madura.

In my last report on this subject I dealt with sections Five and Six, which considered especially the National Finances of Europe, and the Peasant Revolution in Europe. In this article we shall review briefly sections Nine and Eleven, which are studies of the Labour Problems of Europe, and a consideration of the Stabilization of the Exchanges. The "Manchester Guardian Commercial" and Professor Keynes are performing a valuable service in making these truly timely studies of intricate problems both popular and accessible to readers in all parts of the world. A continuation of the series is promised for the year 1923.

In section Nine the series of articles on The Labour Politics of Europe, are most informing. Ramsay Macdonald in treating of British Labour's Policy of Reconstruction says :—

"If the rulers of the dominant European nations were to continue for a short time longer, their policy of futile punishments and impracticable reparations, the reconstruction problems which they will hand over to their successors will be the liquidation of nations declared bankrupt....."Our moral foundations are wrong. They must be changed." The Labour policy is simple and straightforward. It divides reparations into two categories—the restoration of the devastated districts and payments made by way of indemnity. The first can best be done by direct labour and the supply of material.

When we consider the category of pure indemnities, we stand upon a totally different field—a field where, unfortunately, the most intricate economics are found side by side with the most intellectually paralysing emotions."

In discussing the amount and form of reparations, Ramsay Macdonald says they require two sanctions—the first that of justice, the second that of economics. It is needless to say that his position is that the whole problem of reparations should be carefully reconsidered. Philip Snowden has an interesting article on—How far is the British Labour Party Socialist? His position is that while the ultimate aim of the Party is undoubtedly socialistic, its immediate desire is for the democratic control of public utilities. This is seen from the following clause in the constitution of the party :—

"To secure for the producers by hand or by brain the full fruits of their industry, and the most equitable distribution thereof that may be possible, upon the basis of the common ownership of the means of production and the best obtainable system of popular administration and control of each industry or service."

This aim is also supported by a resolution passed at the last annual conference of the Labour party, which may be regarded as a declaration of what the Labour party considers to be the immediately practical steps towards the ultimate aim of the "common ownership of the means of production." The terms of this resolution are as follows :—

"That this Conference reiterates its demand for the nationalization of all essential means of wealth production, distribution, and exchange, and instructs the Executive Committee of the Labour party to insert in any programme for a general election the immediate necessity of the nationalization of the land, mines, (railways) and other essential public services. This Conference further declares, however, that when nationalization enables an industry to be conducted for the public welfare, instead of private gain, the spirit of social service and the efficient production of the nation's needs will only be possible if the organization of industry is founded upon the principle of democratic control, including those engaged in the work of production and distribution."

The barest mention can only be made of some of the other interesting articles in this number. Jean Longuet discusses—The Evolution of the French Socialist Party and its Coming Tasks. Dr. Rudolf Breitscheid writes on—The German Labour Movement. There are two articles on International Labour Organizations by Albert Thomas and Arthur Greenwood. The whole issue is full of material on the condition and possibilities of the present day Labour movement in Europe.

In section Eleven we have an informing discussion of the problem—The Stabilization of the Exchanges. Professor Keynes' position is—"If the quantity of a currency can be controlled, then sooner or later its value can be stabilized." Together with Irving Fisher of Yale University Mr. Keynes is

opposed to deflation. He says : "The magnitude of the internal debt in most European countries is, therefore, the fundamental reason why it is impossible to restore the value of their currencies to their former value, and why even the project of stabilizing them at their present level may be too optimistic." Keynes' solution of the problem is—devaluation. He argues "that no attempt should be made to restore to their old parity those currencies which were depreciated by more than 90 per cent below their former value." The experts at Genoa also recognized this when they "ventured to suggest" that "a considerable service will be rendered by that country which first decides boldly to set the example of securing immediate stability in terms of gold" by devaluation.

Professor Irving Fisher continues the discussion with an article on—Devaluation *versus* Deflation. He says :—

"When a nation now addresses itself to the question of what its future monetary standard shall be, it may resolve this question into two. The first is, "How far, in justice, should we return toward the original value or purchasing power, in commodities, of our money" ; and, secondly, "after we have returned to this point, how can we most nearly maintain stability ?" The second question I have treated at length in my book—"Stabilizing the Dollar." The first question is the one which I am to discuss in the present paper..... If we apply these same principles to Europe we see why one instinctively draws back from the suggestion that the franc, the mark, the rouble should be restored to their pre-war purchasing power, or even their pre-war gold values. Such appreciation or deflation would so upset all debtor and creditor relations as to cause the most terrific depression of trade imaginable. Always and inevitably deflation produces injustice to debtors, stockholders, enterprisers, and similar classes, and so causes depression of trade. No more insane policy for European reconstruction could be proposed than to restore the greatly depreciated currencies to their original parities—either in purchasing power, or gold values. And only slightly less insane is the proposal to go as far in that direction as the countries can. The best course of action appears to be for the countries to work back to the centre of gravity of existing contracts so far as practicable. Bygones must be bygones..,..... In short, for most countries devaluation is not only more practical but more just than any extensive deflation."

Irving Fisher concludes with a reference to his thesis which is gaining ground to-day, namely—stabilizing the purchasing power of gold by an index-number :—

"But now, a century later, after the world war, during the next decade or two, public opinion will, I hope, take another great step forward. We shall think in terms of a more ideal standard than gold, *i.e.*, the purchasing power over commodities, as shown by an index-number..... But if the gold standard is to be maintained we must make that standard a standard in fact as well as in name, a standard of purchasing power."

Other articles that I can only mention are : The Real Ratio of International Interchange, by Professor A. C. Pigon (Cambridge) ; The New Exchange Regulations in Germany, by Professor Schumacher (Berlin) ; French Credit Establishments, by Alexandre Celier ; Italian Banking To-day, by Piero Sraffa.

This excellent and highly informing number concludes with a descriptive and illustrated record of The Historic Bank of England. Again let me say that the "Manchester Guardian Commercial" and the General Editor Professor Keynes are rendering a very real service to readers and students all over the world in discussing in such a readable form the pressing problems of reconstruction in Europe.

Tasmania has spent over £6,000,000 on railways and nearly as much on roads, which are the finest in the Commonwealth. There has always been an annual loss on the railways, and now that the opening up of the country and the increase of population might have enabled the railways at least to pay interest on the capital invested in them, motor traffic is becoming a serious menace to their success. The Minister of Works in a statement to Parliament has pointed out that during the last eleven years an equal number of railways has been constructed, few of which are earning anything above working expenses, while some have not been paying even the cost of operation. He added his opinion that the construction of roads of sufficient width and strength to carry motor traffic instead of railways to serve the farming districts was worthy of consideration. The Government have under consideration the matter of employing motor lorries to act as feeders to the railways.

Shortage of Labour Supply for Indian Industries.

By B. N. Gokhale, B.A. (Hons.)

Being mainly an agricultural country, India has a plentiful supply of labour for her agricultural needs. Though the townward trend is strong and is growing stronger still, yet her rural districts never get depleted of their essential supply of workers. Moreover, the move to industrial centres is, from the worker's point of view, only temporary inasmuch as he is determined to return to his native village as soon as he has saved enough to sustain him for a considerable period of his life. Thus in the main, India's ruralization yet remains unbroken. But this has undoubtedly exposed her to the workings of the capricious elements, the draughts, the consequent famines and epidemics following each other in a running refrain.

To guard against such ever-threatening dangers, it was recognized on all hands long ago that India must develop a diversity of occupations. It was thought that India's industrial development must be the means whereby to relieve the congestion in the agricultural areas. But the belief of a possible solution of the difficult problem of rural overcrowding through industrial development has been found, as will be seen later, a mistaken one. The real benefit that can accrue to India through a rapid progress in her industries lies in the consequent rise in the economic status of her people through the filtration of factory wages to the country sides, the rapid sale of her raw materials, etc., which would convert Indian agriculture into a sound economic proposition. Moreover, such a development, from the point of view of national economy, would be welcome, for it would make India a self-sufficing economic unit. Hence Indian industry must progress absolutely unhampered. Having abundant natural resources, it must not starve through insufficiency of capital or of labour supply or other kindred causes. The rapid rise in the rate of the workers' wages in Indian factories and other industrial establishments raises the pertinent question: whether the alleged cry of the capitalists as regards shortage of labour supply for industries in this country is real and if so why?

The list provided by figures and statistics can never afford complete satisfaction; nevertheless it is invariably invaluable from an economic standpoint if adopted with rational reservations. The India Office in 1921 prepared a striking statement proving India's claim for a seat on the Governing Body of the International Labour Office by showing the great industrial importance of India, the criteria of "industrial importance" fixed by the Council of the League of Nations being the number of the industrial or factory population in any country, the magnitude of its external trade and the nature of its industrial organization. Leaving apart the United Kingdom, United States of America, Germany and France, which possess undoubted pre-eminence in industries among the nations of the world, a comparative statistics was prepared by the India Office as regards India, Italy, Belgium, Japan and Switzerland. It was found that "the workers in Indian industries, mining and transport outnumber the whole population of Spain." We can use the statistics thus furnished and by making suitable changes, see if we can infer anything from it :—

*Workers in Industries, Mining and Transport.

Countries	Number of Workers	Population	Percentage of population employed
1. India.	20,219,000	319,075,132	6·4
2. Italy,	4,946,000	40,000,000	12·5
3. Belgiam.	1,708,000	7,600,000	22·5
4. Japan.	2,006,000	55,963,053	3·6
5. Switzerland.	925,000	3,860,000	23·9

We here see that though numerically, India is overwhelmingly superior in industrial importance to Italy, Belgium, Japan and Switzerland, as regards the actual percentage of her population employed in industries, mining and transport, she is inferior to all others except Japan. This is, of course, due to the unrivalled position of India as regards agriculture, which is the mainstay of her teeming millions.

Now, since the complaint as regards the insufficiency of labour supply is generally raised by the factory owners in India, let us find out the progressive increase in the volume of employment in Indian factory industries

* In the matter of statistics and figures that occur in this article, I must acknowledge the kind and ungrudging help rendered to me by the investigator of the Labour Office, Government of Bombay, who allowed me the use of a number of statistical reports and labour publications.

together with that in the number of factories working, for a number of years. The following statement gives the number of operatives employed in factories in India (including the Native States) against the number of factories existing from the year 1905. The factories mentioned are owned either by the Government, Local Bodies or the Native States, by Companies or by Individuals. The number includes various kinds of factories whether worked by mechanical, electrical power or otherwise; and even factories not coming under the factory legislation are included :—

Year	No. of factories	Index numbers of the increase in No. of factories	No. of operatives employed	Index numbers for the increase in the volume of employment,
1905—06...	2,688	100	832,136	100
1910—11...	3,554	132·2	1,014,241	121·9
1914—15...	3,975	147·8	1,161,418	139·5
1915—16...	4,054	150·8	1,135,183	136·4
1916—17...	4,619	171·8	1,212,375	145·6
1917—18...	4,868	181·1	1,238,238	148·8
1919—20...	5,312	197·6	1,367,136	164·2

We thus see that during the decade and a half under review, while the increase in the number of factories is almost cent per cent, the increase in the volume of employment of factory labour is only 64 per cent over the base figures. This latter increase, as will be seen hereafter, will also have to be considerably discounted owing to a variety of reasons. Again, we have to note, that during this period, there have been at least two periods of intense and feverish industrial activity in India, not to speak of the impulse given by the War to Indian industries from 1914. The figures therefore seem to indicate that there is a considerable ground for dissatisfaction as regards the volume of labour power employed in Indian industries; that so far as mere numbers are concerned, the employment of labour in our industries is not at all likely to relieve congestion in agricultural areas; and lastly, the general complaint of capitalists as regards insufficiency of labour supply in this country seems to be not without foundation. What then are the causes of such a state of affairs?

The first and foremost cause to be mentioned in this connection is the conservatism of the people which makes them reluctant to leave their homes and the occupation of their forefathers. Though the prejudice against migration to other places is rapidly diminishing, still dire necessity alone can drive the rural workers to seek employments in cities. Intense attachment to their native places always harks them back and a return to their villages when they have saved sufficient amount of their earnings is ever present in their minds. Not only this, but during the monsoons, a considerable number of the working classes is withdrawn from the urban areas to the native places for agricultural purposes. Thus the workers, in most cases, are migratory, mere birds of passage. In the words of Mr. C. N. Wadia, C.I.E., the workers in industries are "agriculturists first and agriculturists last."

Coupled with the conservatism is their total lack of education. Misunderstandings between the workers and the employers is easy under such circumstances resulting in frequent strikes and lock-outs in industrial centres like Bombay, which spread like wild fires through class sympathy that knits the workers together. Bonuses and wage increments are frittered away in increased absenticism while the lure of the grog-shop and the bucket shops, when they exist, is almost irresistable. The result is that while the latter causes prevent a rise in the standard of living of the workers which indirectly affects the industries, frequent strikes and augmented absenticism deal direct blows to the industrial concerns through the loss of actual working days which means a diminishing of labour power actually available.

Another potent cause for the deficiency in the supply of workers for Indian industries is the lack of an adequate and decent housing accommodation in the great industrial centres like Bombay. The appalling squalor of the slums and the insanitary conditions obtaining there are notorious. The overcrowding in the workers' tenements leads not only to insanitation but to other evils of a worse kind. Epidemics like the plague and influenza find fertile soil in the slums and create great gaps in the ranks of the workers who are unable to resist the deadly effects of such diseases. Recent influenza ravages carried away no less than six millions of people in India, chiefly from among the lower and labouring classes though in this case the country sides perhaps suffered more through the lack of proper medical help. Malaria and other diseases also work a havoc upon workers in cities with a terrible effect on their physique and efficiency.

The rigid caste system prevalent among the Hindus is, from an economic point of view, most deleterious. Caste restrictions are responsible for precluding persons of a higher

aste from taking to a low kind of work, so hat youths of the higher castes in India are nding themselves continually going to the all in the growing struggle for existence. The untouchables or the depressed classes re in a state no better than serfdom. These, t the lowest computation, number no less han six crores and are an inexhaustible poten- ial source of labour power that can be easily tilized. Economic, if not humanitarian and atriotic considerations alone urgently demand heir uplift. They are endowed with robust onstitutions and are honest and enduring. hey have no alternative therefore but to emain in this degraded state or embrace some ther religion or emigrate to foreign lands as abourers open to any amount of economic xploitation.

There are other groups of people who are nerely parasitic, representing an immense vastage of power in every country. The abitual criminal tribes, the thieves, the swind- ers and the n'er-do-wells and the vagrant ribes like the gypsies are a menace to the eaceful population of the villages. The re- lamation of these tribes is undertaken by Government and the various religious and hilanthropic missions in India and in many ases members of the criminal tribes have een settled as peaceful members of the com- nunity plying a respectable trade of their wn. The beggars and the wandering sadhus resent a problem peculiar to India. They ive upon an indiscriminating and easily ullible charity and philnthropy which cha- acterizes Indians. The beggars claim begging s their birthright and refuse to earn money y honestly working in some trade. The eggar problem in cities like Bombay is engag- ng the attention of local bodies and the Government.

Emigration to other lands completes the ist of causes which have contributed to the hortage of labour supply for our industries. Paradoxically enough, while the cry of our apitalists is for yet more labour, workers in housands have emigrated abroad as wage arners. More than a million labourers from ndia must be working in the plantations of he numerous British colonies. The causes f such a large migration are not far to seek. or one thing, the attraction of a higher and rising scale of wages obtainable abroad is onsiderable. The rise in the scale of wages n India from one point of view must be re- arded as a sympathetic rise due to the incre- ent in wages in foreign countries. Secondly, emigration is affected by the state of agri- culture in India in any particular year. The rise in the number of emigrants in any year must be attributed to the failure of the agri- cultural crops. On the other hand, the de- crease in emigration is found to synchronize with a good agricultural season in any Indian province. Accurate figures for all the pro- vinces are not obtainable. The report for emi- gration in Madras for 1921 gives very interest- ing figures in this connection. In 1921, there was a decrease in the number of emigrants from Madras to the Straits Settlements, Burma and Ceylon and this was rightly attributed to the favourable character of the agricultural season in Southern India. The increasing fragmentation of land due to the working of the Hindu Law has, in many cases, turned agriculture into an unprofitable concern, so that foreign securities of labour find very fertile sources of labour power in districts where such difficulties have arisen. Thirdly, the rigidity of the Hindu Caste system and the wretched condition of the untouchables is responsible for such migration abroad, so that especially from Madras large numbers of the so-called untouchables emigrate to Ceylon, Burma, the Straits Settlements, etc. The Emigration and Immigration Report for 1921 for Madras referred to above states that in 1920, 345,937 persons emigrated to the Straits Settlements, Burma and Cyelon while the returned emigrants in the same year num- bered 279,599 ; while in 1921, 251,348 persons emigrated to the above places from Madras as against 277,583 returned emigrants. The decrease in the number of departures and the increase in the number of returned emigrants to Madras in 1921 is attributed to a favourable agricultural season in Southern India and to the slump and stagnation in the tea and rubber industries in the Malay States, Ceylon and Burma. It is also to be noted that in the case of Burma and Ceylon, it is impossible to differentiate emigrants who go to settle, from passengers who cross to and fro frequent- ly. Lastiy, prejudice against migration is slowly diminishing. Easy passage to and fro has much contributed to this result. Behar and Madras alone are responsible for much migration from India. Thus it will be seen that in the large exodus of workers to foreign countries each year, India loses an excellent source of labour power.

The remedies that suggest themselves for rectifying such a state of affairs are numerous and may be briefly indicated in conclusion :—

(1) The amelioration of the depressed classes and the removal of untouchability is a prime necessity. In spite of the profuse lachrymation and lip-sympathy expressed for the wretched condition of the low castes especially of late, nothing practically has been achieved, uptil now, in the direction. The real solution of the difficulty is economic and lies in equipping the untouchables with the instruments of their own salvation. For this purpose, an experiment of starting factories, entirely manned and managed by the depressed classes, is well worth a trial.

(2) Cottage industries should be fostered regularly whenever possible. They are not necessarily antagonistic to large scale establishments and provided they are worked on healthy lines, they can be rendered useful as utilizers of bye-products which often go to waste. Secondly, when worked on the co-operative principle, they are of immense utility in training people to be economic and hard-working and in imparting practical lessons in commercial integrity and industrial organization and are but bridges to big industrial establishments employing a large number of operatives. They should thus be made the instruments for attracting shy and indolent labour power.

(3) Thirdly, adequate organized efforts should be directed to recruit workers from all the parts of the country. Care must be exercised, however, in doing this, so that the country sides must not be denuded of the requisite amount of agricultural labour. Inter-provincial migration is already rapid. Behar, Orissa, the United Provinces, Rajputana and Madras supply nearly a million and a half of workers to the fertile fields and busy factories of Bengal. This internal migration must be further facilitated. Emigration abroad should be restricted by legislation if not altogether prevented. Legislation must also be undertaken to tackle with the beggar problem so serious in many of the Indian cities.

(4) The advantages of the use of mechanical and electric power in industrial establishments need not be harped upon since they are evident to all. Labour saving appliances are being rapidly used in factory industries. But the use of power in agriculture will be attended by no less beneficial results. Improvements in the crude and antiquated agricultural methods along Western lines are ong overdue. They would not only make agriculture more profitable, but would set free a large amount of labour power. This spare labour power can be utilized for factories very easily. For this purpose, however, a spread of education, especially of technical education, is necessary.

(5) Lastly, vigorous steps should be undertaken to diminish the high rate of child mortality especially among the working classes. Children must be protected and taken care of. This work will be greatly facilitated if the workers' standard of living is raised. But every endeavour to better the lot of the operative classes will prove merely a pursuit of a will-o'-the-wisp, if certain essential remedies are not applied. A standardization of wages and a regular system of welfare work would be productive of immense good. "Strike free" housing accommodation for labourers in cities should be provided for by Municipalities and the Local Boards. The Bombay Development Scheme must be mentioned in this connection, although at the most only one-half of the labourers in Bombay would be decently lodged thereby, while the rest would still remain at the mercy of the unscrupulous sharks and speculators among the landlords. The lure of the dazzling dens of drink, gambling and vice, the sinks down which most of the surplus wages and bonuses obtained by workers disappear, should be effectively checked. All this would not only make the workers happy, and contented but the capitalists would be enriched by an efficient and a sufficient supply of labour power to work their industrial establishments. Thus the happiness of the one will prove a tower of strength to the other.

The Krupp town of Essen (writes a correspondent to the "Morning Post"), is a place of few attractions—it may be compared with such railways, towns of ours as Crewe and Swindon—but before the war it had an hotel. The Essenhof, which though small, was one of the most luxurious in Germany. This was maintained by the Krupp firm for the entertainment of their customers, who were free to make it their home without any charge on their visits to the town. The temptation of this hospitality was also regularly offered to the inspectors appointed by large customers to watch the execution of Krupp's contracts for rails, locomotives, and other engineering. I knew many (says the correspondent) who as regularly declined these opportunities of living handsomely on nothing a year. Others, however, not so punctilious, drew a subsistence allowance from their principals, which they never had occasion to spend.

Village Panchayats in the U. P.

From the Resolution of the U. P. Government on the working of Village Panchayats, we note that the Village Panchayat Act (VI of 1920) received the assent of the Governor General on the 1st of December, 1920. Rules under section 75 of the Act were drafted by Mr. D. R. Lyle, I.C.S., and after examination by a small informal committee were notified on 26th April, 1921. The rules were framed on the simplest lines and, though requiring alterations in some directions, have, on the whole, worked well. In the course of the following months the Act was applied to the whole rural area of the Province with the exception only of villages included in the jurisdiction of those honorary munsiffs whose jurisdiction it was decided to retain. The first panchayats were established in July, 1921, in the Agra and Muttra districts. By the end of September, 1921, 1,134 panchayats were in existence. At the end of March, 1922, the number had risen to 3,314. The number in existence on the 30th September, 1922 was 4,011.

The great variation between district and district in the number of village panchayats established is the natural result of the Government's policy. It was recognized that in conducting this novel experiment, district officers would be feeling their way through unexplored obstacles, and that the regulation of the rate of advance must be left to their discretion. It was important to avoid setbacks, and district officers were bidden to attempt no more than they could effectively control. Some were more cautious than others, or the circumstances of their districts were less favourable. The number of panchayats established in a district is no measure of the interest taken by the district officer. Some of the most interesting and instructive reports come from districts which have set up very few panchayats.

The selection of villages in which to establish panchayats demanded great caution. The field of choice was greatly restricted by the necessity of avoiding villages given over to non-co-operation or driven by faction. Elsewhere men of the necessary intelligence, integrity, and force of character were often absent, or, if present, belonged to a single caste or family; so that a well balanced panchayat could not be formed. Again, many villages, otherwise apparently suitable, received with apathy or even disapproval the suggestion that a panchayat should be established. Progress was easiest in pattidari villages; and hitherto it has been the experience that panchayats rarely flourish when overshadowed by the influence of a predominant zamindar. This is not simply the result of a very natural and probably quite transient suspicion which some district officers have (with some notable exceptions) noticed on the part of larger zamindars. Tenants of large landlords have always been in the habit of taking their disputes to the landlord or to his agent and, instead of appealing to the novel tribunal, they have continued to do as they have always done. Special difficulty was experienced in the selection of suitable sarpanches. It is clear that on the personality of the sarpanch depend in great measure the just and harmonious working of the panchayat and the authority which it succeeds in acquiring in the village. In fact, as one officer has remarked, the sarpanch is the pivot on which the whole panchayat turns; and particularly in the remoter tracts, it has not been easy to discover men of the right type, who had also sufficient education and intelligence to understand the simple rules and to maintain the simple registers.

Concerning the working of panchayats much of great interest has been reported. There is a conflict of opinion on the important point of jurisdiction. Many officers prefer to confine the jurisdiction of a panchayat to a single village, believing that it is then easier for the panchayat to secure the attendance of parties and witnesses, to arrive at the true facts and to enforce its decrees; they have observed that villagers tend to be suspicious or resentful if subjected to a panchayat formed in another village. But other officers, finding the discovery of a suitable personnel to be the great initial difficulty, favour the inclusion of several villages in one circle as enabling them to experiment over a larger area. It is also found that a panchayat is more likely to be successful if its activities are not markedly intermittent and a larger area has the advantage of providing a more regular flow of cases.

The preservation of a due balance of interests in the composition of panchayats is another point to the importance of which district officers seem thoroughly alive; but, even so, it was apparently necessary in most cases to

confine selection to the higher castes. In some districts the addition of an occasional low-caste member has not been resented and such members have generally been found useful, particularly in cases in which one of the parties is of low-caste. Still it is clear that predominantly low-caste panchayats are unworkable at present; from which it follows that the system cannot yet be extended to villages containing very few high-caste families.

The quality of the work so far done by the more successful panchayats is the most encouraging feature of the reports. Promptness in the disposal of cases seems a general and very satisfactory characteristic; and several reports state that panches have generally performed their duties with honesty, intelligence, and common sense. Individual panchayats in nearly every district have won both confidence and popularity and have been freely resorted to. Complaints and applications for transfer were usually few relatively to the number of cases disposed of, and were seldom held to be well-founded. For instance, in the Bundelkhand division 3,079 civil and criminal cases were decided by the panchayats. Yet the Commissioner was able to report that in no single instance did a District Magistrate find it necessary to interfere in order to prevent a miscarriage of justice. This is a wonderful record, and the experience of some other divisions was almost as encouraging. At the same time it must be pointed out that district officers wisely recognize the importance of supporting the authority of panchayats in their early stages, and are most reluctant to weaken that authority by interference, even in the form of enquiry. It may be inferred that the true record of panchayats was less free from blemish than the statistics would suggest. The inference is supported by some positive indications. Not much use seems to have been made of panchayats within easy reach of regular courts and there is mention of a tendency on the part of complainants in cases triable by panchayats to insert in their complaints fictitious offences only cognizable by a regular court. Similarly, one division reported that accused persons summoned before panchayats were in the general habit of applying for transfers. Nor is satisfaction with the quality of work universal. One or two district officers have expressed decidedly unfavourable opinions; several more have arrived at no definite conclusion; and even those who are most sanguine are careful to qualify their optimism by the statement that it is too early yet to judge with confidence.

A high percentage of panchayats established, probably as high as 50 per cent, has as yet done no work at all. One officer consoles himself with the reflection that the explanation may have been that no cases or disputes occurred which the unused panchayats could have dealt with. This explanation may be true of a few individual panchayats but can hardly be so of the majority. It seems more likely that the village selected was not really suitable, or that the officer who chose the members did not succeed in picking quite the right stamp of men. But in many cases the explanation probably lies in the old saying that "nothing succeeds like success." Chance still plays a large part in the matter. If soon after a panchayat is set up, a case comes before it and is rightly decided, a vogue may be created and success assured. But if for some little time no one ventures to appeal to the strange tribunal, it becomes discredited and stands condemned without a trial. But whatever be the explanation, a failure remains a failure, and brings some discredit on the movement, and therefore, the weeding out of useless panchayats is a matter which will require careful attention. At the same time before deciding on the dissolution of an apparently useless panchayat it will be necessary to ascertain that the panchayat has really had a fair chance of proving its utility. It may be, for instance, that some courts have overlooked the provisions of sections 31 and 32 of the Act. The U. P. Government take this opportunity of reminding the courts that in this respect the law leaves nothing to their discretion, and that they are no longer competent to try cases falling within the jurisdiction of a village panchayat. Similarly, attempts to oust the jurisdiction of a panchayat by including fictitious matters outside the panchayat's jurisdiction should be rigorously discouraged by disposing of the fictitious allegations and referring the real dispute to the panchayat.

Some notion of the work of which a successful panchayat is capable may be gathered from the following instances:—

In the Jhansi division 3,079 cases were disposed of by 183 panchayats, none of the remaining 115 panchayats having any case instituted before it. In the Budhana tahsil of the Muzaffarnagar district, where circles of large size have been preferred and an attempt made to cover almost the whole of the rural area, 32 panchayats had 1,430 civil and 417

criminal cases for trial. Before six panchayats in the Mawana tahsil of the Meerut district 785 cases were instituted. In the Iglas tahsil of the Aligarh district 19 panchayats tried 292 civil and 45 criminal cases, while in the Khair tahsil of the same district the proportions were reversed and 94 civil and 365 criminal cases were tried by 16 panchayats. Among individual panchayats the most remarkable achievement reported is that of one panchayat in Rae Bareli which alone tried 166 cases. Figures for the whole province cannot be given as no form for the report of these statistics has yet been prescribed, but it appears probable that the average for the province would not for a single panchayat exceed between 10 and 20 cases annually. On the other hand, many individual panchayats clearly have to their account a tale of cases which does them every credit, and must already have afforded an appreciable measure of relief to the regular courts. The proportion of civil to criminal cases was usually four to one, but there is much variation and in some areas criminal cases are actually the more numerous. As one officer remarks, much must depend on whether the local money-lender does or does not reside within the jurisdiction of the panchayat.

A most satisfactory and significant feature is that panchayats seem generally to have been successful in enforcing their decisions by the weight of their unaided authority. And only three districts mention that official assistance had to be invoked. Decrees seem more difficult to execute than sentences to fines, possibly because panchayats are more interested in fines which go to swell the village fund. All successful panchayats seem likely to be financially self-supporting, and some quite considerable balances are already reported. But the only districts in which any serious attempt has yet been made to utilize the balances are Basti and Gorakhpur, where the panchayats had the benefit of suggestions made by the new district medical officers of health.

Two reported results though by no means clearly established are too interesting to leave unmentioned. Three districts report that the mere existence of a village panchayat tends to discourage the commission of the petty crimes cognizable by panchayats, such as mischief, and the grazing and theft of crops. Another district officer believes he can discern a similar effect on the civil side. He thinks that the credit of the villager is enhanced by the presence of a panchayat, with the happy result that the money-lender is prepared to reduce his rate of interest on new loans.

Upon a general review of the situation the Governor acting with his Ministers, feels that he is justified in declaring that an exceedingly promising beginning has been made. This (it is said) is largely due to the tact and judgment which district officers have shown in fostering the new institutions and of which the Government desire to express their warm appreciation. But it must be recognized that it is only a beginning and as yet a small one. The whole experiment so far has designedly been conducted on a small scale and under favouring conditions; it has been confined to a few villages selected with the utmost care; every stage of its progress has received the special and personal attention, not only of the district officer himself but also in most districts of a picked deputy collector as a special panchayat officer. The very novelty of the undertaking was calculated to arouse in all who shared in it a special interest which may not be sustained. In all these respects, as the experiment expands, conditions will become less favourable. The question probably foremost in the public mind concerns the prospect of ultimately establishing a network of petty courts covering the whole area of the province and disposing of all petty disputes. No answer can be given here. But this much seems clear. Long before such a goal is approached, the close supervision of panchayats by official agency will have become impossible. Some other stimulus must take its place. It can only be the force of public opinion, insisting that the standard, which the best panchayats are now setting, shall be maintained. That force has yet to be developed. Meanwhile, hope is fully justified, but not yet confidence; caution and patience and a close watchfulness will long be needed.

We have received a copy of a book entitled "Interdependence" by the well-known Swiss economist Robert Hofmann, of Vevey, whose proposals to the Brussels Financial Conference were published by the League of Nations and are reprinted in his present book. Mr. Hofmann's theme is that nations, like individuals, cannot progress or exist without one another's help. He discusses the defects of reparation debts, of "sanctions," of Allied debts, etc., in relation to the general economic welfare, and reviews the incidence of import duties, excise, and dumping. Finally, he sets forth certain principles by the adoption of which he believes that the present national chaos may be settled.

Ideas from the British Industries Fair.

By H. G. Alderton, Chamarajendra Technical Institute, Mysore.

London,—Fair it is named,—yet its enthralling fairness but serves to illustrate the extreme unfairness in limiting so rigorously, such a delightful exhibition, to the eyes of the trade buyer only. On the contrary its extremely thronged and congested precincts suggest the overwhelming majority connected with trade, and it is hoped that the multitudes present were in satisfactory proportion to the volume of the trade transacted.

The fair formed a very representative collection of the British manufactures reinforced by Overseas Art and trade goods, which completely filled ten large halls with very conveniently classified goods. The function of the fair was the development of trade, and the convenience of the trade buyer and merchant was very carefully studied ; every facility was given to examine and compare and if necessary test all classes of goods. An Information bureau and packers and shippers offices offered every assistance upon matters relating to trade and export and a most useful catalogue—directory, classifying both manufacturers and products was given free.

Indian Industrial Arts and Crafts were exhibited in an unusually large stall under the care of the Trade Commissioner, and consisted almost exclusively of handicrafts of the Punjab and United Provinces with a few specimens of Burmese Art. The goods were of excellent quality and craftsmanship and the colours unusually well selected and harmonious ; inlays of ivory and metals, printed and dyed cotton goods, embroideries, lacquer ware, carpets, brass and silver damascened articles. The ivory work was mostly turned with but few of the very fine carved ivories of India. The lacquer goods were mostly from the Mayo School of Art and were particularly fine both in colour, design and execution, especially the 'engraved' work generally executed in two, deep, rich, harmonious colours.

Kashmir Arts and Crafts were exhibited by Messrs. Pillay and consisted mostly of the well-known painted 'papier mache' executed in exquisite floral patterns, embroideries were also shown. Nothing was exhibited similar to our Mysorean crafts of Sandal carving, gold pattern weaving, pearl and ivory inlay and rosewood carvings, nor yet anything to compete with their excellence, it is regrettable that they were not represented, but they are possibly reserved for the coming Great Empire Exhibition of next year.

Of particular interest, especially to Indian manufacturers, was the extensive exhibition of dye stuffs. The dye expert in attendance and showed samples of both the old and the new dye compositions, both of which had been exposed together to the rigour of the Indian sun. The old dyes had faded completely away in many cases, yet the new, especially prepared compositions, of exactly similar colour, had stood the test for three months without the least perceptible change of tint. These dyes are prepared for use with cotton, wool, silk, wood, leather, lac, etc., at a slightly higher price than the old unreliable fugitive dyes.

Ermoid and lactoid new products of a somewhat similar nature, are bye-products of milk residue after the fats and oils have been extracted. It is an industry forfeited by Germany who previously had the monopoly of its manufacture. This material is supplied in sheets, rods or tubes, 20″ x 16″ or upto 2½″ diameter by 40″ in length. It is readily bent into shape, but cannot be melted ; it can be cut, filed, ground, turned and dyed ; it is quite odourless and inflammable, semi-transparent and takes a high polish. It is supplied in an extensive range of colours and also as an imitation of ivory, horn, tortoise-shell, turquoise, lapis-lazuli, coral, amber, jade, etc., and is extensively adapted for use in manufacturing bowls, stick and umbrella handles, caskets and boxes, beads, combs, lampholders and reflectors and shades, and all kinds of handles. Samples are being sent for trial to Mysore.

A new process of preparing statuary, panels and objects of bronze and other metals at a greatly reduced rate was exhibited. It consists of an electrical deposition of metal upon a non-metallic surface or substance. The deposited metal is generally about 1/16″ in thickness but varies with the size of the product and is afterwards filled. The most delicate details of modelling and design are infallibly reproduced, and can be used and polished as the ordinary metal cast statuette or idol. It was demonstrated to be nearly indestructable and the firm offer to reproduce any given figure or design in metal or to cover with a protective metal plating any object

required and as examples of the latter they show a pair of baby's first shoes, silver coated and polished, and also leaves and seed vessels, etc. The work is strong and durable and costs approximately Rs. 15 per square foot of surface finished.

Another intersting novelty was an imitation stained glass called 'Imistain,' it is much lighter in weight and is prepared much more rapidly and cheaply, the labour of lead jointing is superseded. Yet the results, of which many very beautiful specimens were shown, is claimed to be quite permanent. The panels are limited to an extreme size of 6 feet said to be restricted by the size of the furnace. It can be adapted to many uses, such as, screen panels, lantern lights, lamp shades and reflectors, door panels, advertisement signs in addifion to its nominal use as a window decoration. The cost is but one-tenth of the cost of ordinary stained glass. An ideal feature for the decoration, cooling and refreshing of Indian interiors in the shape of a small electric fountain was shown. It can be used as a table decoration or as the centre for a small aquatic tank, it has several fine sprays which throw the water upwards and inwards to fall upon a central crystal cone, the same water is repeatedly used.

There was not a large show of furniture, but some exceptionally well designed models, considerable use is made of fine rattan as a panelling. Figured walnut is much used for large panelling in wardrobes and almirahs, but such panels are extremely thin and every advantage is taken of the beauty of the grain, especially to make a symmetrical pattern by reversing or even quartering the grain design. The general tendency in the design of chairs seems to be in imitation of period styles, and upholstery in velvets, brocade or leather in dark rich colours. For nursery furnishings much use is made of white enamel and painted or transferred designs of fairies, goblins and animals, which idea extends to the dads, frieze, lampshades and bedrails.

The cane work shown was very disappointing in novelty and originality. One pleasing feature however was the stained cane of a deep dark rich brown colour, which looked very effective and good. Use is made also of a red, dark, Malacca cane for supports, uncovered. Other canes were apparently tinted with lacquers very bright and showy in effect but of doubtful permanency.

The great advance made in the comfort and luxurians of all classes of lighting effects is highly illuminating and ingenious apparatus places the up-country resident upon terms of equality with the usually more favoured town dwellers. The majority of effects depend upon the artistic adaptation of coloured silk shades, in every variety of shape, to jewel and soften the light. Alabastor shades and reflectors and standards are also greatly used with beautiful results. Another beautiful effect is the placing of lights under a large flat crystal dish of water, upon which flowers are floated. Amongst a multitude of other interesting novelties are, a blank metallic gramophone disk with which records can easily be made and played upon your own gramophone: pressed fibre imitation wood carvings, remarkably sharp and clear, to be attached with panel pins and polished in the usual manner. It is worthy of note that one firm dealing exclusively in ivory articles of utility, obtain their entire supply of tusks from Africa, the tusks are considerably larger, have no cracks and are cheaper than the Indian ivory and there is a possibility of obtaining a supply of small pieces, suitable for inlayers use at much reduced rates.

The Australian Government, through the Federal Treasurer, has arranged for the Commonwealth Bank to finance a scheme for the pooling of the produce of the planters of Papua up to a sum of £30,000. In 1922, a conference of representatives of various planting concerns was held in Melbourne, and it was decided to form a national council of planters. The proposal has now been approved in Papua and it is suggested that a central committee should be formed to deal with matters relating to the industry. It is intended that all plantation copra shall be received by agents on behalf of the central committee, advances made against it, and each shipment from Papua constituted a pool. As each pool is wound up, the surplus will be divided among the growers. Rubber will be dealt with on different lines. With financial backing, the committee will be able to store rubber, and at the same time pay to the growers a price which will enable them to carry on. It is expected that rubber will have to be stored for extended periods.

Notes from America.

Lessons in Thrift for Children.

Thrift is not known as an American virtue, but the attempt being made to teach American school children to save has met with surprising success in those schools where savings banks have been established. In one of the New York City school systems, the number of savings accounts jumped from 11,763 in October 1921 to 29,159 in October this year, although the number of schools was increased only from seventeen to twenty-four. The receipts per month increased from $4,000 to $18,000 and the balance on deposit increased from $14,000 to $137,000. The number of regular savings accounts, opened by pupils during October, was 133 in 1921 and 541 this year. The Pittsburgh system, which was installed about a year ago, now reports net savings on deposit of about $500,000 belonging to 75,000 of the 87,000 pupils in the 140 Pittsburgh schools. Collections during six weeks amounted to $115,000, with withdrawals of only $24,000. Three of these schools announce that all the pupils in them have savings accounts in the bank. The record made by Pittsburgh during the past year may be eclipsed by Providence and nearby cities and towns, during 1922, for after only four days on which deposits were made in 194 schools, nearly 53,000 of a total enrolment of 61,000 pupils, deposited a total of $98,000. Withdrawals amounted to only $207, nine schools having every one of their pupils as depositors. From a large manufacturing town of New York comes the report that on the opening date of the system there, 8,000, or seventy-eight per cent of the entire school enrolment, became depositors, with an average deposit of fifty cents. Some smaller towns have begun their systems this year with a participation as high as 100 per cent. Plans are now being made for the semi-annual survey, which is expected to show that the conditions indicated above are typical whenever pupils are afforded the facilities of this important educational service.

Railroad Progress.

The United States has two and one-half miles of railroad for every thousand inhabitants, which shows a greater mileage per capita than any other nation. With one or two exceptions, it was recently pointed out by transportation executives, who have been conducting a survey of the industry in the United States as compared with conditions in other countries. In making comparisons it was stated that the nations selected were representative of both densely and sparsely populated territories. Canada, Australia, and Argentina, like the United States, were described as comparatively sparsely populated countries, and these three nations were shown to possess the greatest number of miles of railway per 1,000 inhabitants. Canada has 4.42 miles of railway per 1,000 inhabitants; Australia, 3.54 miles, and Argentina, 2.66 miles. Sweden and Mexico stand next to the United States in point of mileage per 1,000 inhabitants, the former having 1.59 miles of railway and the latter 1.02 miles. The more densely populated countries, such as the United Kingdom, Belgium, France and Germany, have less miles of railway per 1,000 inhabitants. The United Kingdom has .52 miles; Belgium and France each have approximately .90 miles and Germany .60 miles per 1,000 inhabitants. Italy has but .31 miles of railway for each such unit of population. The United States, it appears, is the greatest builder of railways of all nations of the world. Its mileage is not only greater than that of any other nation, but it also exceeds that to be found on any single continent other than North America. Furthermore, when compared with other nations of comparable size, the United States is shown to possess the most mileage per unit of area. The comparative data for countries, as compiled by the Bureau of Railway Economics, is shown in the following table:—

Country	Railway Mileage	Mileage per 1,000 population
United States	264,373	2.50
Canada	38,888	4.42
Australia	23,569	3.54
Argentina	23,156	2.66
Sweden	9,358	1.59
Mexico	15,841	1.02
France	35,145	0.90
Belgium	6,893	0.90
Switzerland	3,321	0.86
Germany	36,131	0.60
Brazil	17,478	0.57
United Kingdom ..	24,396	0.52
Spain	9,538	0.46
Italy	12,501	0.31

A Scientific River.

For the first time the great delta of the "Father of Waters," as the American Indians named the Mississippi, has just been surveyed with true accuracy, the United States Coast and Geodetic Survey has lately revealed. From the air, by using cameras, that great fan-shaped marshy region stretching 600 miles into the Gulf of Mexico was charted, and important shifts of land and water were discovered. Formerly it was necessary to survey it from boats, using tall signals and special ladders and tripods, on account of the prevalence of marshes and tall vegetation. Much of it is inaccessible on foot. For these reasons the topography of this area has always been largely a matter of guesswork on the part of surveyors and engineers. A seaplane, camera and men were furnished for the survey by the Navy, and pictures were taken of the delta from a height of 8,000 feet. Over a thousand photographs were subsequently formed into a mosaic or composite picture. Many totally unknown lakes and ponds were discovered by the aviators. Old stream-beds and changes due to over-flowing banks could be traced. New sub-deltas were found that had formed since the last survey. Some places existing on the last chart have either ceased to exist or have altered completely in form. The most important of these changes is in the vicinity of the South Pass, the main entrance to the river. Former surveys showed the west bank of this Pass as a marshy area extending out into the Gulf for a distance of over four miles. Now, according to this recent photographic mapping, it is merely a narrow strip, so narrow that it is giving the engineers considerable concern, as a new "crevasse" may break through at any time, completely altering the mouth of the river. Owing to the many forces constantly at work on the Delta, changing the contour of the coastline, producing entirely new areas and completely wiping out others, it has been necessary to survey it frequently. With aerial photography, this can be accomplished in much less time and with more accuracy than by the old methods. As it is a region of practically no difference in height, such as would cause errors in scale, it is admirably suited to this method of surveying.

Huge Revenue Losses.

United States tax collections during the fiscal year ended June 30, 1922, fell off almost $1,400,000,000 or thirty per cent, as compared with the previous year, according to the annual report of the Internal Revenue Bureau. Income and profits taxes collected during the year showed a decrease of $1,141,000,000, or thirty-five per cent. Total tax collections for the year aggregated $3,197,451,083, compared with $4,595,357,061 for 1921, while income and profits taxes for 1922 amounted to $2,086,918,464 against $3,228,137,673 the previous year. Miscellaneous collections arising from taxation other than that on incomes and profits amounted to $1,110,532,618 for 1922, a decrease of $256,686,770, or nineteen per cent. This slump, according to officials of the Revenue Bureau, was accounted for mostly by the repeal or reduction in rates of various taxes provided for in the Revenue Act of 1921, effective January 1, 1922. The net expenditure for collecting taxes for 1922 was $34,286,651, which was equivalent to $1.07 for each $100 collected as compared with seventy-two cents for each $100 the previous year. The difference in the relative cost of collection for the fiscal years 1921 and 1922 is attributed to the large reduction in the revenues of 1922 incident to the shrinkage in business and incomes, the repeal of certain miscellaneous war taxes and various provisions of the law such as the amortization of war-time facilities and the increase in individual exemptions contained in the Revenue Act of 1921, with the consequent reductions in the income-tax liability of corporations and individuals. Of the various revenues, tobacco and fermented liquor taxes only showed increases over 1921. Collections, other than income and profits taxes, for 1922 as compared with the preceding fiscal year were, distilled spirits, including wines $45,563,000 against $82,598,000; fermented liquors $46,000 against $25,000; tobacco manufactures $270,759,000 against $255,219,000; oleomorgarine $2,121,000 against $2,986,000; capital stock tax, including other special taxes $90,544,000 against $91,281,000; miscellaneous, including war excise taxes since 1917, $686,881,000 against $914,227,000, and sales of internal revenue stamps by postmasters $14,616,000 against $20,880,000.

Writing on the Sky.

Writing on the sky by means of a white trail of chemically generated smoke, an airplane flew over New York City recently, inscribing a gigantic "Hello U.S.A." against the clear blue sky. Crowds gathered in the streets in all parts of the city to watch the

plane, which appearing only as a swiftly moving dot on the end of a long trail of smoke, wrote out the greeting, which was visible for many miles. The aviator left Mineola at 12-30 and started writing over lower Manhattan at 12-45. After leaving a huge "Hello" scrawled against the blue at an altitude of two miles, he moved a little farther north and spelled out "Hello U. S. A.," which covered a distance of nearly four miles, and was written in letters a mile high. The white smoke which forms the letters is generated by a chemical formula which is the invention of Major J. C. Savage of London, who is in New York to superintend the first American trial of his invention. It is manufactured at the rate of 250,000 cubic feet a second and passes through a jet in the extreme rear of the plane, which is a high-power, one-man fighting craft, and flies at a speed of 125 miles while writing. Major Savage has been working on this invention for thirteen years, believing that it would prove valuable, not only for commercial purposes, but also as a means of gauging air currents. It received its first trial in London last May, and was later demonstrated in Paris and Brussels. The writing is done by skilled pilots who are all practised in the art of spacing and measuring the letters by means of landmarks below, picked out before the flight is made.

Fearful Vegetable Poison.

Poison is so powerful that all the people on earth could be killed by one millionth of half an ordinary thimble full of the botulinus toxin, which occurs in spoiled vegetable food. The average man would die from a dose of 0.00000000000000001 cubic centimetres of this poison. There are 473 cubic centimetres in a pint. One cubic centimetre would be enough to depopulate the whole earth with 999.999 parts left over. Botulinus poisoning was first known as "sausage" poisoning and was detected after fatalities resulting from eating sausage, meats and fish. Recently, this poisoning has been more common after the eating of decayed vegetable foods. It is caused by the germ Bacillus botulinus and, unlike the toxin of diphtheria or lockjaw, it is deadly poisonous when introduced into the body by way of the mouth. Contamination of foodstuff producing this poison is not common and should such poisoning be present, it is usually readily detected by the putrid odour of the food. If the poisoned food is boiled, it ceases to be harmful, while even when the poison is actually consumed, nature and an antitoxin may protect the individual.

Statistics on War Cost.

The war cost the United States a little more than $1,500,000 an hour. After America went in, it lasted 14,000 hours more and cost all of the European Allies combined, out of their own resources, a little less than $2,750,000 an hour. Besides direct contribution of more than $1,500,000 an hour, the United States loaned to the allied Governments nearly $750,000 an hour, and these loans now constitute the European war debt of the United States. Direct advances of Liberty Loan dollars from the United States Treasury amounted to $9,500,000,000. When hostilities had ceased, France, Great Britain, Italy, Belgium and others took over from the American Government on credit, docks, buildings, plants, railroads, machinery and vast stores of food and other supplies. This wholesale bargain sale of American equipment on European soil increased the debt to more than $10,000,000,000. Loans for relief and unpaid interest have slowly increased it since until now it stands between $10,500,000,000 and $11,000,000,000.

Tariff and Cuban Sugar.

Three of the four million tons of sugar consumed each year in the United States come from Cuba. Under the new American tariff an import duty of $1\frac{3}{4}$ cents is now being collected on each pound of this sugar, an increase of seventy-five per cent over the old protective tariff, and an addition of $40,000,000 to the total of the American consumer's yearly sugar bill. As a result, the refiners of Cuban sugar, recently filed a petition with the Tariff Commission, asking it to exercise the power the new tariff law left with it, to investigate a complaint against the rate of duty now being charged and recommend to the President such change as the Commission finds justified.

Non-beverage uses of Alcohol.

Because he has discovered uses for some fifty products of alcohol, a young chemical engineer of Columbia University has recently received the Perkin medal awarded by the Society of Chemical Industry, for "the most important contribution to applied chemistry made by any citizen of the United States."

Experiments are being made on a small scale with cotton growing in the Bulawayo district, with encouraging results.

Canadian Finance and Trade.

MONTREAL, March 1st, 1923.—A distinct and far-reaching contribution has been made to international stability and good-will by the amicable agreement which recently was arrived at, with regard to the financial obligations of the Government of Great Britain to that of the United States. According to the settlement agreed to, the British Government has undertaken to wipe out its indebtedness by a series of annual payments extending over a period of sixty-two years. The amortization of the principal is provided for by annual payments beginning at the rate of one-half of one per cent of the entire original debt. The first of these payments amounts to $23 millions and the last to $175 millions. Interest is to be paid at the rate of 3 per cent for the 1st ten years and 3½ per cent during the balance of the period. After deducting payments which already have been made, the total debt, with accrued interest up to December 15th,1922 is $4,604,128,085. This is to be reduced by a cash payment to $4,600 millions for which amount British Government bonds will be issued at par to the Government of the United States.

While the magnitude of this debt to the United States seems small in comparison with the entire British debt of $36,306,794,233, and while the total indebtedness of other nations to Great Britain is $9,637,7000,000 —an amount approximately double the British debt to America, yet the latter exceeds the pre-war indebtedness of the United States by nearly $1,500 millions, and must, of necessity, greatly increase the already staggeringly large burden of taxation in Great Britain, being the equivalent, according to the British press statements, of an income-tax of 6 pence per pound.

BUSINESS FAILURES.

The severity of the process of liquidation, through which business has been passing, has been strikingly emphasized by the unprecedented number of mercantile failures which occurred during 1922, and by the unusually large aggregate of liabilities involved in these failures. The total number of failures, according to "Bradstreets" was 3,185 in comparison with 2,350 during 1921, while liabilities aggregated $55,047,342 in comparison with $48,553,757 during the previous year. This is an increase of 35.5 per cent in total failures and of 13.4 per cent in liabilities.

In making an estimate of the present outlook, one must take into consideration the fact that the number and magnitude of failures both in the United States and in Canada, for the most part, have tended to decline as the year advanced. The decline was of sufficient magnitude in the United States to result in a net decrease in liabilities involved in failures, in comparison with those of 1921, and this fact points to the completion of the deflation process in the United States. Although Canada is not so far advanced in the movement, it can safely be assumed that the trend is in precisely the same direction. That the rate of business mortality was higher in Canada last year than during 1920 or 1921 is no cause for alarm. The duration of the period of readjustment gradually intensifies the strain for those firms which are operating at or near the margin of safety, and normally the mortality index number rises at an increasing rate on account of the cumulatively adverse effect of the failures of firms on other firms connected with them.

THE PULP AND PAPER INDUSTRY.

After the rather unsatisfactory conditions which existed in the pulp and paper industries during 1921, the year 1922 was one of recovery and expansion, and the improvement has been well maintained since the beginning of the present year.

The pulp and paper industry in Canada has experienced phenominal development during recent years, and has rapidly become one of the most important of the country's industries. The possibility of gradually expanding output and of constantly broadening markets has attracted both foreign and domestic capital in increasing amounts. It is interesting to compare the development of Canadian newsprint production,—one of the most important branches of the industry, with that of the United States, during the past half dozen years. The respective production figures are as follows :—

	Canada	United States
	Tons	Tons
1917	690,000	1,359,000
1918	740,000	1,260,000
1919	808,000	1,375,000
1920	876,000	1,512,000
1921	813,000	1,225,000
1922	1,082,000	1,448,000

An examination of these figures indicates the rapid development which has taken place in Canada. While production in the United States has increased 7 per cent during the period, Canadian output has increased 57 per cent. The comparison seems to justify the expectation that the Canadian production will shortly surpass that of the United States.

The figures representing the export of newsprint for 1922 are equally encouraging. Last year's total was 35 per cent in excess of that of 1921. A survey of the statistics shows that Canada exported, last year, more than 88 per cent of all the newsprint produced, retaining only 12 per cent for domestic needs. The United States is still the largest customer, having purchased, last year, 887,000 tons, or 82 per cent of the total production. Of the balance, Australia and New Zealand each purchased a small quantity, while the remainder went to the United Kingdom and to South America. In general, the outlook for foreign business is probably more satisfactory than ever before. Foreign competition is not greatly to be feared; Germany is practically out of the market, as a producer of high grade paper in quantity; the strike in the Swedish pulp plants will probably restrict their output later on; the American output moreover is required in increasing quantities for domestic use.

In general, what has been said of conditions relating to the production of paper, applies also to the pulp industry. According to present indications, it seems certain that the markets for Canadian pulp will be able to absorb the increasing output, particularly in view of the fact that new outlets are continually being found. Japan, for example, is taking increasing quantities annually. The "Newsprint Service Bulletin" for January 30th reports that a recently established freight rate of $4.50 per ton on woodpulp from Canada to Japanese ports has caused Canadian pulp to control that market.

Glass Manufacture in Burma.

The imports of glass into Burma are enormous. The chief items are bottles, chimneys, window glass and glass plates for silvering, which is done locally but often very imperfectly. In view of the facts that the Customs import duty is now high, that the demand for glass articles is extensive, that the Government of India are inclined to support local industries in Burma as in India, and that the raw materials for glass manufacture are available in large quantities in this Province, the wonder is that no capitalist has considered it worth while to inaugurate an up-to-date glass factory in this part of the world.

An attempt to fill this need was recentle made in an out-of-the-way and unsuitably part of Burma (Taikyi-Taikgee) by a native of the soil, who, in the first instance, had the enterprise to proceed to the Punjab and pick up what knowledge he could of glass manufacture there. Despite the difficulties which usually face a pioneer industry of a highly technical kind, coupled with the unsuitability of the site selected for his initial experiment, this Burman has been able to make sufficient headway to induce some of his fellow-countrymen to put money into the venture, convert it into a limited liability company under the Indian Companies Act of 1913, and to establish it in the vicinity of Rangoon.

This concern will probably forge ahead, as there will be no difficulty now, with the extra capital available, in obtaining a supply of more or less skilled labour from India, and, possibly, experts from Europe. There appears to be room yet for competitors in the same line of business, as the total imports of glassware into India during 1920-21 amounted in value to £3,376,182, of which Burma's share was £196,165, but our consumption would possibly be greater were prices cheaper.

In the year under reference the largest exporters of glassware to India and Burma were :—

Japan	£1,310,778
British Empire ..	690,767
Belgium ..	466,729
Austria-Hungary ..	432,670
Germany ..	203,242
Italy	104,435

Both India and Burma show signs of waking up industrially. Both possess in large quantities the raw materials, not merely for glassware, but for the manufacture of a very large number of articles which it is now the fashion to import.

Views and Comments.

BY "ECONOMICUS".

We wish to record our appreciation of the quite outspoken and bold attitude taken up by Sir Dinsha Wacha during the course of the debate on the Indian Stores purchase policy in the Council of State on 14th March. Prof. Kale moved for effect being given to the recommendation of the Stores Purchase Committee regarding the gradual reduction and reconstitution of the Indian Stores Department in England and the development of the Stores Department in India with a view to expand the scope of the work of the latter and render it thoroughly efficient. Mr. Chadwick, as usual, said that the Government had every sympathy with the object of the resolution, but on the ground that the Inchcape Committee had made certain recommendations in regard to the purchase of stores and the Government of India had not yet recovered from the effects of that bombsheli Mr. Chadwick moved for the adjournment of the discussion until such time as would enable the Government to determine their attitude in the light of the Retrenchment Committee's Report. This evasive reply moved Sir Dinsha's ire who condemned the whole of the Stores Department in the India Office as a waste department and said that "the Secretary of State was putting pressure on the Government of India in order to see that the latter did not encourage Indian industries but British manufactures." The Government member, of course, repudiated the charge—what an easy conscience!—but Sir Dinsha remained adamant.

* * *

In reply to a charge by Mr. Neogy, during the current budget discussions in the Imperial Legislative Assembly, Mr. Hindley (Chief Commissioner of Railways) admitted that the process of deferring renewals of railways on account of financial stringency had been going on for a long period before the war. Mr. Innes, Commerce Member, admitted that Companies had been partly profited by the method, but pleaded in extenuation that the general taxpayers had the benefit and so also the shareholders according to the terms of the contract and added that it was no use crying over spilt milk and it was no use trying to recover money from the Companies (as some non-official members desired). It is difficult to see the benefit to the taxpayer. You raise more revenue and allow the Companies to gain illegitimate profits by the process of starving the lines in part, then apply for loans in the London market for "rehabilitation" paying interest in subsequent years and raise the railway rates to meet the increased charges. In some of these can we detect any benefit to the taxpayer. Mr. Innes concluded: "The Schworth Committee made proposals in regard to the creation of a depreciation fund which had been approved by the Inchcape Committee and I do not think that any complaint will be made after they are adopted." True, but where is the definite promise that the Government *is* going to adopt the proposal?

* * *

During the course of the Budget discussion in the Madras Legislative Council, some plain words were addressed by some non-official members on the official excise policy on drink. By far the most eloquent and most effective attack was that by Mr. R. Vekitaratnam Naidu who after explaining that the present excise policy "crippled the economic stability, injured the physical stamina and impaired the moral character of a large section of the community" concluded by saying that "the policy of maximum revenue and minimum consumption would not at all appeal to the people in the same degree as what happened in the Moplah train tragedy—maximum number in minimum space." We have already pointed out in these columns the fallacy underlying the "maximum revenue: minimum consumption theory," for the quantity drunk and the numbers that drink are not regulated by the *price* but by the *habit*. After this severe onslaught Mr. Patro, Excise Minister, put up a half-hearted attempt to justify the present policy and had ultimately to fall back upon what is after all the truth, *viz.*, the necessities of Government revenue. Mr. Patro emphasized, after the strict "official" or bureaucratic fashion, "the need for moving slowly and continuously" and thought that "they must be sure of the ground on which

they stood." We are not sure whether it is the Hon'ble Mr. Patro, the Excise Minister, or Mr. Patro, the Philanthropist and *quondam* anti-drink agitator or the Excise Department that was in existence long before Mr. Patro was born that is "not sure of the ground on which they stood." The members were informed that "a questionnaire had been circulated among all those interested in the question; the answers would be considered by the Advisory Committee who would thereafter suggest proposals and the Government would finally settle a policy." Indeed moving slowly and continuously with a vengeance!

* * *

Thanks to the first of the Viceroy, the doubling of the salt duty has become an accomplished fact. Politics apart, the measure was intended (1) to cover the deficit of four crores and (2) to raise India's credit abroad. The promises of the Viceroy and the Finance Member are (1) provincial contributions would be lightened, and (2) more money would be made available for the "nation building departments" such as education, medical relief, industry, etc. But the vehemence with which the Viceroy and the Finance Member pleaded on the need for "raising India's credit abroad" is worthy of a better cause. We are not told what further schemes of borrowing the Government has in mind, but it is worthy of remark that even with an unbalanced budget when the deficits were far larger than the present 4 crores the State was able to raise 150 crores in the London market. To have reduced a deficit of 90 crores to 4 crores in a year or two is no mean achievement, and it is our view that even if a small deficit of 4 crores (if it is a real one) were left uncovered this year, India's credit abroad would not be shattered beyond repair as to necessitate a Viceroy's Certificate in opposition to unanimous non-official opinion against the raising of the duty on salt. But frankly, we do not appreciate the frantic efforts made for "repairing" *India's credit abroad*. In this connection we endorse the views of Sir M. C. T. Muthiah Chetty, who spoke as follows at the annual General Meeting of the South India Chamber of Commerce on March 28th :— "It may be one thing to raise the credit of India in the estimation of the investing world outside by showing a balanced budget; but it is overlooked that this desperate insistence on taxing the poor, and thereby draining the very life-blood of the nation to sustain huge Civil and Military Services, will only go to shatter the credit of the Central Government in the estimation of investors inside the country. After all, in a country of this dimension and of the scale of our public expenditure, a great deal depends on such internal credit than upon external credit. As such, if we are at all gaining in our external credit, I daresay we are losing very much in our internal credit." Now that the salt duty has been raised and the budget has been balanced we have only to wait and see whether the Viceroy and the Finance Member will carry out their promises, *viz.*, reduction in provincial contributions and larger expenditure on education, medical relief and industries.

In spite of Government subsidies the unsatisfactory situation of the Sicilian sulphur industry has improved but little, and the producers, who formed themselves into a federation called the "Sicilian Sulphur Consortium", now find themselves with heavy stocks owing to the loss of many foreign markets. In order to help matters a scheme is being discussed by which the Italian and American producers would agree to fix the various European zones where the two organizations might pursue their activities without coming into competition. Representatives of the three principal American sulphur companies are now on their way to Italy with a view to making definite arrangements with the Sicilian Sulphur Consortium.

For several years past the members of the Travancore Sri Mulam Popular Assembly have been representing the need for a State Bank to develop trade and afford facilities to the mercantile and trading classes who needed pecuniary relief. A State official was deputed to Baroda and Mysore to study the working of the State Banks in those States. His suggestion was to open a State Aided Bank. This suggestion was considered by the Economic Development Board which agreed to the proposal. This proposal has been sanctioned by the Travancore Government. For the present the capital is fixed at Rs. 30,00,000, the bank to be run as a non-official agency. The State has granted substantial concession in the shape of deposits, both with nominal interest and also no interest. The working expenses are to be shared by State and other facilities also given. The object of the bank is to develop the trade and also to promote industries.

Books in Brief.

SHORT REVIEWS OF RECENT BOOKS.

Happy India.

By Arnold Lupton. Published by Geo. Allen and Unwin. Ltd., Ruskin House, 40, Museum Street, London, W.C. 1.

We have read with great interest this highly instructive book. The writer, an impartial, if at times somewhat caustic, critic of men and things, gives it as his considered opinion that India might be more happy if she were "guided by modern science." Indeed, he gives to his book the following title :— "Happy India : As it might be if guided by modern science." A great Indian recently remarked that India should increasingly seek the aid of science for her uplift. Mr. Lupton's view is, therefore, well supported, as it is undoubted that a great deal of the future progress is bound up with the aid that science can render to her agriculture, industries, etc. Mr. Lupton, it must be said, does not write in the controversial vein, nor does he enter controversial political topics. He is for the amelioration of the condition of the masses by increased cultivation and by better living. He writes in a spirit of inquiry and in a persuasive spirit. Every welcome should be given to a writer of this kind, because his method is so very different from that of the casual writer on Indian topics. Here is a sentence from the II Chapter of his book, which shows the man: "If I were the Governor-General of India, I should not bother about Tibet or the Pamirs of the North-West, neither should I trouble the Amir of Afghanistan, nor feel the least-bit anxious about Persia, but I should try first of all to see if the resources of the British Empire would enable me to proclaim to the world that I had raised the economic condition of the people of India to one which might claim comparison with the other great peoples of the world." So, he hints, he would back up a working class Governor-General, not a military sporting or autocratic Governor-General, for, instead of military achievement, "one of the first things he would enquire into would be the economic conditions of the working classes, and he would naturally give his time and attention to considering how to ameliorate that condition where such amelioration was obviously necessary." He concludes his book with these words printed in capitals :—"Blame the Government by all means, but blame yourselves as well ; exercise your great intellectual faculties to work out your own advancement, and you will gain not only material wealth, but intellectual joy and the respect of all the other peoples of the earth." A book that deserves to be widely read and pondered in this country by the rulers as well as the ruled.

India and Her Peoples.

By F. D. Walker, Editor of the "Foreign Field". Published by the United Council for Missionary Education, Edinburgh House, Eaton Gate, London, S.W. 1.

This is a book far different from Mr. Lupton's we have reviewed above. This is descriptive of the people and the country. It is interesting in one sense ; it gives a readable pen picture of the people and the land. The chapter on "Village Life in the South," for instance, is typical of the rest of the book. The last chapter, "India in Transition" is rather sketchy and impressionist in nature. Altogether the book has this merit that it is thoroughly readable. It ought to lead the reader to other literature relating to India.

The Indian Year Book, 1923.

By Sir Stanley Read, K.B.E., LL.D. The "Times" Press, Bombay. Cheap edition Rs. 4.

This well-known, handy and accurate reference book has reached the tenth year of its issue. It is, as may be expected, thoroughly up-to-date and comprehensive. The table of contents and index are very full. The chronicle of the year (1922) is arranged month by month and is succinct and lucid. The Bibliography of India is excellent while the sections dealing with Economics and Finance are informing. The "Who's Who in India" at the end of the volume is brief but fairly exhaustive.

For any Book you may want

Apply to—

Manager,
Book Department,
Mysore Economic Journal Office,
Mamulpet, Bangalore City.

An Academic Study of some Money Market and other Statistics.

By E. G. Peake, O.B.E., M.A., LL.B. Messrs. P. S. King & Son, Ltd., Orchard House, 2 & 4, Great Smith Street, Westminster, London. Price 6*sh.*

Though this volume is modestly styled an "Academic Study," it is clearly a valuable contribution to the study of the exchange problem as it affects London and the foreign centres of Paris and New York. Mr. Peake's study (of the period 1882–1913) should provide a means of measuring definitely, though only partially perhaps, the probable future course of trade in general. As such, it may prove to be a "Step towards turning the art of prophecy into an exact science." Mr. Peake writes rather somewhat disparagingly of economists but his work is more important than his criticism, which we may pass by.

Industrial Unrest—A Way Out.

By B. Seebohm Rowntree. Price 1*s.* net. Published by Messrs. Longmans Green & Co., London, E.C., 4.

Mr. Rowntree insists in this booklet on profit sharing as a remedy for industrial unrest. Knowing its success in other places, we feel inclined to second his suggestion. The booklet is a clear statement of the case for a reasonable understanding with Labour. We welcome it, because it ought to go a long way—short and clear as it is—in opening the eyes of the employers and the employed to the evils of industrial unrest.

New Yellow Peril.

By B. Mukherjee, M.A., F.R.E.S. Reprint from Sir Asutosh Mukherjee Silver Jubilee volumes. A brief but suggestive paper on the ill-effects of the use of foreign capital in India.

Economic Reconstruction.

By B. Mukherjee, M.A., F.R.E.S., Reader in Economics, University of Lucknow, Lucknow. Reprinted from the "Lucknow University Journal." A comprehensive survey of the economic conditions of the world with a statement of the possible remedies.

The Philosophy of Non-Co-operation and of Spiritual-Political Swaraj.

By Bhagavandas, M.A. (Messrs. Tagore & Co. Price Re. 1.) A thought-provoking book. though somewhat discursive.

The Music of India.

By H. A. Popley, B.A. Price Rs. 2. Published by the Association Press, 5, Russell St., Calcutta.

This book is issued in the popular series issued by Drs. Farquker and Dornakal under the title of "The Heritage of India" Mr. Popley has spared, so far as we could judge, no pains to make it accurate and interesting. Western writer as he is, his sympathy for Eastern music is real and deep. This view point explains the labour he has brought to bear on his work. The illustrations are many and enhance the value of the publication. The book, for the information it contains, is a marvel of cheapness.

Topics in the Journals.

1. Bulletin of the Imperial Institute, London, Vol. XX, No. 4, 1922.—(1) East American Bamboo as a Paper-making material. (2) The Utilization of Lime seeds.

2. Modern Review, April 1923.—The Dacca University, St Nihal Singh.

3. The Journal of the Mysore Agricultural and Experimental Union, Vol. V, No. 1.—The Defects in Silk Worm Rearing in the State and Some Suggestions to Overcome Them, by M. Yonemura, Silk Expert.

4. The Agricultural Journal, Vol. XVIII, Part II.—(1) Some Aspects of Agricultural Marketing as illustrated by the Lyallpur Co-operative Commission Sale Shops by H. K. Trevaskis, I.C.S. (2) A Preliminary Account of Symbiotic Nitrogen fixation in non-leguminous plants with special reference to "chomelia asiatica" by K. Adinarayana Rao, L.Ag.

5. Lucknow University Magazine, Vol. I, No. 3.–Buddhist Education from the Jatakas by Radha Kumud Mookerji.

6. The Journal of the Indian Industries and Labour, Vol. III, Part I.—(1) A Visit to Glasgow and Sheffield Universities by B. Abdy Collins, I.C.S. (2) Hand-loom Weaving in India by K. S. Rao.

7. The Malayan Agricultural Journal, Vol. X, No. 10, 11 and 12.—Cashew-nut Oil.

8. The Calcutta Review, Vol. VI, No. 3—Economic Aspect of the Indian Rice Export Trade.

9. The Bombay Co-operative Quarterly, Vol. VI, March 1923.—(1) Consumers' Co-operation in Hungary by Otto Rothfild, I.C.S. (2) By-products of Betel-nut.

The Mysore Economic Journal

A Monthly Periodical devoted to the Discussion
of all Economic Topics of Interest

Vol. IX JULY 1923 No. 7

Working Class Budgets in Bombay.

By S. Subbarama Aiyar, M.A., Senior Lecturer in Economics, Christian College, Madras.

Students of Indian Economics should be grateful to Mr. Findlay Shirras, the Director of the Labour Office, Government of Bombay and his co-adjutors for presenting an extremely interesting and instructive study embodying the results of investigations into working class life in the city of Bombay. The volume before us (Working Class Budgets—Bombay, Superintendent, Government Printing and Stationery, Poona, price Rs. 3—14—0) contains a Report and Statistical Tables submitted to the Government of Bombay in which are included the results of no less than 2,473 working class family budgets and 603 single men's budgets—a total of 3,076 budgets—collected during the twelve months—May 1921 to April 1922. These budgets which are sufficiently representative refer to different religionists and castes as well as different industries and different income classes (ranging from those who earn Rs. 30 to Rs. 90 per month) and the results are stated as definite conclusions which can be checked or verified from the detailed statistics provided in the second part of the volume.

The average working class family in the city of Bombay, according to the family-budgets collected, consists of 4.2 persons, *viz.*, 1.1 men, 1.1 women and 2.0 children under 14 exclusive of .6 dependents living away from it. In the city of Bombay as in England the supposed family of five—2 adults and 3 children—is not the representative family.

Earnings.—The average earnings per month for earning men in the family budgets are Rs. 42—5—7, for earning women Rs. 16-11-6 and for earning children Rs. 13—13—5.

Expenditure.—The most interesting part of the Report is that which deals with the expenditure of the family. The analysis of the budgets gives the following percentage expenditure on the main groups of commodities :—

Food	56.8 per cent.
Fuel and lighting ..	7.4 ,,
Clothing	9.6 ,,
House rent	7.7 ,,
Miscellaneous	18.5 ,,

When the size of the family is constant for all income classes the results are as follows :—

Percentage expenditure on	Limits of monthly family income						
	Below Rs. 30	Rs. 30—40	Rs. 40—50	Rs. 50—60	Rs. 60—70	Rs. 70—80	Rs. 80—90
Food ..	60·5	60·0	58·4	56·1	56·1	54·4	52·6
Fuel and lighting ..	8·9	7·9	7·8	7·5	7·3	7·1	6·5
Clothing ..	7·8	9·3	9·3	8·9	8·7	8·6	8·8
House-rent ..	12·0	9·9	9·0	8·5	8·4	7·8	10·0
Miscellaneous ..	10·8	12·9	15·5	19·0	19·5	22·1	22·1
Total ..	100	100	100	100	100	100	100

From the above table Mr. Shirras concludes that "the generalization known as Engel's Law that the greater the earnings a group of labourers earns the smaller will be the percentage of those earnings spent on food is on the whole correct." This way of putting it is not strictly accurate for what one has to consider is the *amount* spent by the different classes on food, etc., rather than the *percentage*. Looked at from this point of view the amount spent on food by the income classes is approximately as follows :—

Income of Rs.	30	= Rs.	18.15 on food.
,, ,,	40	= ,,	24 ,,
,, ,,	50	= ,,	29.2 ,,
,, ,,	60	= ,,	33.66 ,,
,, ,,	70	= ,,	39.27 ,,
,, ,,	80	= ,,	43.52 ,,
,, ,,	90	= ,,	47.34 ,,

This indicates that larger the income the greater is the *amount* spent on food.

Percentage expenditure on different articles of food in Bombay is as follows :—

Vegetarian or non-meat food :—	
Food-grains	34.19
Vegetables	2.99
Milk and ghee	3.09
Tea	0.45
Sugar	1.78
Refreshments	4.18
Others	4.11
Non-vegetarian or meat food :—	
Beef	0.30
Mutton	2.85
Fish	2.81
Total Food	56.75

Rice is the staple food of the working classes. The percentage of families, chiefly consuming rice, is 67.9, jowari and bajri 12.9, and wheat and wheat-flour 8.4. The remaining 10.8 per cent consume rice, jowari and bajri or wheat and wheat flour in varying proportions.

The expenditure on fuel and lighting is chiefly on wood and kerosene. The percentage expenditure decreases as the income rises, but is not subject to any great difference between the various income classes.

The expenditure on clothing is particularly low in the lowest income class and rises in the higher classes.

Housing.—The main problem of Bombay life is the problem of housing and this is strikingly illustrated by the statistics provided in this volume. About 97 per cent of the working class families live in single rooms whose monthly rents range from Rs. 3—8—0 to Rs. 5—8—0, while double rooms cost from Rs. 7 to 10. These tenements must be situated in the most overcrowded and filthiest parts of the city, for I have seen that better class single room tenements in more spacious and sanitary chawls fetching Rs. 18 to 25. Two-thirds of the population of the Bombay city, writes Mr. Shirras, live in one-room tenements as against 6 per cent in London. The result is a high rate of infant mortality, drink, vice and a host of terrible maladies which are intimately associated with bad housing. It is a relief to learn that the Development Directorate, the Improvement Trust and the Municipality are making efforts to provide additional quarters for the industrial population.

Education.—The expenditure on education (2 annas 11 pies per month on an average per family) is disappointingly low being nil in the lowest class and negligible in other classes except in the highest. Illiteracy and ignorance are the twin banes of working class life in India. Mere multiplication of schools will not do, but the adult workers are to be educated by example and personal influence. "It is the 'missionary' spirit in its widest and best sense," writes Mr. Shirras, "that is the primary force for such adult education, and this is independent, or nearly independent, of particular dogmas inculcated. It has to work more on the woman than on the man. One sometimes forgets that general ability depends to a large extent on the surroundings of childhood and youth in which the most powerful influence should be that of the mother."

Drink.—Next to bad housing and insufficient education, perhaps associated with them as cause and effect, is the vice of drink that blights the life of many a labourer in Bombay. Though one may not rely on the statistics collected—the worker being averse to giving information on this head—it is noticeable that the largest expenditure on miscellaneous groups of articles is on liquor being Rs. 1-15-9 on an average per month for all budgets and Rs. 2—12—4 for those families spending on drink. As Mr. Shirras observes, "the development of Bombay's industries seems to have been associated with a rise in alcoholism as has been the case in England and other countries."

Indebtedness.—Another group of statistics refers to indebtedness. Interest on debts shows an average expenditure of nearly 3 per cent of the total monthly expenditure of a family. No less than 47 per cent of the

families are in debt. The causes that lead to indebtedness are such extraordinary expenses as those connected with marriages, funeral rites, festivals, payment of old debts, etc. The usual rate of interest is one anna per rupee per month or 75 per cent per annum and in a few cases 2 annas per rupee. The indebtedness of the family in debt extends ordinarily to the equivalent of two and a half months' earnings.

Such are the bare facts of economic life as disclosed by the statistics collected by the Labour Bureau. On the basis of these figures, Mr. Shirras passes certain general remarks on working class life in Bombay which will be read with interest. "The standard of living or of comfort is not a high one in Bombay..... Necessaries for efficiency, such as suitable house accommodation and conventional necessaries are not, what they ought to be. The expenditure on education is little or nothing, and children in the mills are not trained up for work as are the children of working class families in other chief industrial countries. Moreover, the families are not, as a rule, able to save to support themselves in sickness or in old age. One is driven to the conclusion that teaching to spend more or less wisely is more important than saving in cases where there is a stubbornly low standard of life." Mr. Shirras notes further that "an increase of wages does not always increase efficiency, but may actually decrease it, and also the worker, instead of increasing his expenditure, on receiving higher wages, is content to go on earning the same as before." I agree with Mr. Shirras that "spending wisely is the crux of the whole labour problem," but the other proposition of his as regards Indian labour that "absenteeism rises when pay is raised, and after a bonus absenteeism still further rises leading to industrial death" cannot be explained away, as Mr. Shirras evidently does, by a simple reference to the defective psychological response of the Indian worker or the absence of unsatisfied desires. The hours of work are so long and the industrial environment so bad that workers must be pardoned if they prefer leisure to work when the bare necessaries of life are satisfied.

The problem of industrial labour is complicated in all countries. Much more is it so in India. Industrialism has come to stay and the path of wisdom lies in improving the conditions of labour. The improvement of his conditions is to be brought about partly by external and partly by internal means, provision of a good environment and awakening of the capacity of the worker. A three-fold pull is what is necessary, pull together in a single direction and as a whole, that of the employer, of the State and of the worker himself. The individual workman is weak; he must unite, organize. The contact of mind with mind may bring difficulties, but it is also fruitful of good. There must be leisure for the worker, but above all a certain capacity to make a good use of that leisure. There must be earning, but above all a certain capacity to spend wisely and well. We wish to see a wider development of labour unions intelligently organized, greater sympathy on the part of Indian employers towards the aspirations of their working men and greater wisdom on the part of the State to harness the forces of goodness to increase the wealth and welfare of the working classes.

New Supplies for Lyons Silk Weavers.

A special Paris correspondent writes :—Lyons silk weavers are anxious about their supplies of raw material. French producers are becoming fewer, China is exporting less of its crop, and the output of Japan is almost wholly bought by the United States. The Lyons Chamber of Commerce has voted sums for the encouragement of silk-growing in Syria and Indo-China. Perhaps similar action will be taken later in regard to French North Africa, but the territory's present silk producing possibilities are uncertain.

Indo-China has made marked progress in silk-growing during the last five years. The chief production, however, has hitherto been consumed locally, exports to France not exceeding 20,000 kgs. per annum. A Lyons firm has built several silkworm nurseries, and many possibly erect a spinning plant.

Syria requires financial assistance particularly on account of so many bushes having been burnt as fuel during the war. There is also a shortage of labour, whilst the equipment and buildings are out-of-date. Syria produced four or five million kgs. of fresh cocoons before the war. After falling to zero during hostilities, the quantity rose to two million kgs. last year. Lyons is practically the sole user of silk grown in this territory.

Problems of Woman Labour.

By S. S. Aiyar, B.A., M.S., Mem. A.C. Soc., Mysore Government Research Scholar, U.S.A.

The question of woman labour has not received the attention it needs. Social workers talk of child welfare; but its fundamental relationship to woman labour is not recognized. Employers think of the sex in labour, only to exploit the weaker one by paying lower wages. They lose sight of the fact that on the physiological basis, the weaker sex has a right for preferential treatment from the standpoints of hours of work, working conditions and wages. Further women labourers have a two-fold task to do: the wage earning labour and household duties. For the proper discharge of household work they must needs conserve energy. And a fatiguing ten-hour day work is prejudicial to the interests of the woman, her home and children. Most of maternity mortalities, still-births, infant mortalities, sickness are directly or indirectly traceable to the long daily toil in insanitary conditions.

Want of adequate home life, complete absence of intellectual leisure and precepts of religion, constant care and worry of poverty and sickness of ill-cared children or self, and finally long hours of work in insanitary and ill-furnished places, tend to smother the intellect, weaken the physical frame and destroy the higher instincts.

What this has been costing us, in our national life, can only be gauged by instituting a survey of the physical, moral and domestic conditions of our work women.

Need for a short Working-day.

Statistical study, at any rate in U. S. A., has shown that long hours of work affect the health of the women and eventually the health of children. Thus it affects both the present and future generations. Primarily the cause of this is the physiological and psychological fatigue of a day's monotonous work. Exhaustion and impaired health and low vitality follow fatigue in order and "the physiological is replaced by the pathological and ultimately death may ensure." This has been actually the state in many of our labour families, where sickness and death are constant visitors. Furthermore this fatigue and impaired health leave their lasting mark of physical and mental weakness on the future generations.

To the capitalist and the "Practical" businessman, the exponent of increased profits and output, this does not appeal. But from his own standpoint, the employer is not benefited if the human machine is fatigued. For fatigue is "the diminution of working capacity often accompanied by feelings of weariness caused in a human organism by the length and intensity of some activity." It is caused not only by the exhaustion of the substances supplying the energy, but also by the accumulation of the products of the chemical reactions taking place in the human body. It is only during repose that these tonic impurities should be removed by the natural process of respiration as also the waste repaired. If no chance is given to such a remedial and recuperative natural process, obviously the system suffers and decays resulting in impaired health and physical weakness. Rest is thus as much an active process as work.

Now how can a woman after 10 or 12 hours work a day and having to do several hours of domestic work have that much needed rest? And is long hours of work compatible with the healthy life and continued efficiency of the worker?

In so far as fatigue leads to diminution of the working capacity, even the upholders of output and efficiency are not benefited by driving labour to long hours of work. Statistical study of the "measure of fatigue by output" has revealed the fact that long hours are not justified by output. The investigations of the U. S. Department of labour and its several Bureaus have established that the reduction of the hours have led to actually increased output. Hence there is no use adhering to crude rule of thumb methods in the face of scientific data. Either greed must be softened by humanity or crude methods replaced by scientific ones. Further, considerations purely of capitalist's self, cannot be the final word in the settlement of labour questions. For, labour problems are intensely vital and national and the State must come to the protection of the ill of labouring women.

A uniform 8 hour day must be established by legislation with adequate living wage. No overtime or night-work should be permitted in the case of women.

The present system leading as it does to excessive fatigue and pathological complexities, is a national evil. It tends gradually to lessened efficiency, until finally it becomes nil. There have been many instances where

employers, whose very inhuman treatment renders their employees unfit for work, have driven labourers out of employment, to face starvation and death. An economic waste is involved in such overfatigue and killing of efficiency. Its disastrous effects on the individual and the nation is evidenced by the terrible waste that we every day witness, more especially when any epidemic visits the houses of those poor unfortunates.

The State responsible for the well-being of the rich and poor alike should not allow such national waste to go on. Democratic States have always made it a concern of theirs to protect their women. The Industrial Welfare Commission of the U. S. America recommended a basic eight-hour day for women. The Federal and State legislations definitely recognize eight hours as the maximum limit of day's work. And some States do not even permit overtime and night-work in the case of women.

Working Conditions.

While such protection is given to women in U. S. A. where higher wage standards and better working conditions exist, there is practically no such protection for our women workers.

No less, again, is the importance of the question of the working conditions. The evils of the present system are not remedied merely by the reduction of the hours of work. Employers pay scant regard to the standards of working conditions which are necessary for the comfort and health of the employees. This phase of factory or workshop management is a neglected field in the industrial world of India. And this disregard of the matters of sanitation, comfort of employees and cleanliness, has been the cause directly or indirectly of the spread of sickness and disease among work people. A certain minimum of comforts—if they can be called comforts at all—are absolutely necessary for the normal working efficiency of the human machine. A comfortable seat at the place of a monotonous work, an adequate lunch and rest room for eating and ease during recess period, a sanitary toilet (water closet) and bath room, a place of amusement and reading are things which will save the workers from the effects of fatigue and mental dejection.

This is more necessary with women workers. One deplorable feature is the utter disregard for the well-being of the babies of working women. Wherever women work, one can see young babies consigned to the mercies of the elements helplessly lying on the lap of mother earth. Again it is also a common sight to see young babies left in charge of inexperienced boys and girls while the mother is away for work. This has been the cause of untold misery both of the mother and the child, and invariably of infant mortality among labouring classes. It is no wonder that a high percentage of the babies, devoid of the tender care of the mother, under-nourished and exposed to all the hazards of insanitary surroundings perish young.

There is only one way of avoiding this human waste, and to save the mothers of the whole world of pangs and miseries. They are day-nurseries. In the name of the people who form the backbone of the nation, in the name of humanity and justice, the profiteers, the Government and the public should come to their rescue. The law should protect them and the funds of philanthropy should come to their aid.

Leaving this primary need, the women workers need certain minimum of other comforts. Poverty and necessity and the very instinct for self-preservation drives girls, women, mothers of young babies and even prospective mothers to seek remunerative work. The fact that they seek work and are powerless and unprotected does not justify inhuman treatment to be meted out to them. Perhaps their realization of their driving poverty and abject helplessness makes them too meek and timid to demand any fairness on the part of the employer.

But if there is any spark of humanity in them, a concern for the country and nation, the employers should immediately realize the gravity of the situation and provide the comforts needed by the workers, especially women.

To give a few concrete examples:—Continuous standing or sitting in inconvenient seats has an injurious effect on the health of girls and women, especially of expectant mothers. Seats improperly adjusted for work or crude and rough make-shifts for seats are as good as having no seats. Many operations which women do standing, at times as long as 8 to 10 hours a day, could as well be done with properly adjusted work-table and chair. For women who move about or carry things here and there, certain amount of leisure and rest space should be allowed. Want of lunch and rest rooms is another hardship on workers. Any one who visits a factory or mill premises at the recess period can see hundreds of men and women squatting in the open eating their scanty hurried lunch. It looks as though the

employer cares nothing for the bodies of his workers. Without proper food and adequate rest how can the labourers maintain their physique, their health and working efficiency? The employers would answer that it is no concern of theirs and if the workers become inefficient they will turn them out. The unreasonableness of such an argument is obvious. To employ labourers, to pay them inadequately, to provide them no human comforts, to drive them to hard work and finally to dismiss them when this very process tells upon their health and efficiency is at once cruel, and unjust.

Health Service.

Further a rest room is all the more needed for the workers who become indisposed and suddenly taken ill. In many places, neither a rest room is provided not even first aid nor medical help given. Except in the case of fatal or major injuries, the unfortunate worker is left to her own resources, with the result that nearly 50 per cent of the cases develop complications leading to unemployment, hunger and misery. Medical aid on the spot would save a large number of labourers from the consequences of improper, delayed or no treatment. This neglect of their duty on the part of capitalists has cost many a man his life and many more protracted illness or disablement, leading to semi-starvation of the family.

Sanitary Facilities.

A most serious condition both from the points of view of the employees and the public, is the insanitary and inadequate water closets (Lavatories). The provision of this need must be on the basis of the needs of the workers and not on the basis of the capitalist's money saving policy. The provision of adequate sanitary facilities and necessary cleaning force cannot be too strongly insisted upon.

Again every employee would wish to have a bath, especially those working in hot dirty places. For the good of the workers as well as for the good of the community this must be provided.

Instances like these can be multiplied. But the above are enough to show how the neglect of this phase of industrial welfare has been the cause of so much misery and mortality among the poor workers. But it is all the more serious from the point of view of women. Their unique physiological conditions, their maternal functions and their delicate constitution demand a minimum of comforts and a fair standard of working condition, without which their unique functions are affected and the coming generations sacrificed.

Wages on the Basis of Work.

Women workers are victims of another disability imposed on them in the form of low wages. For same kind of work a woman is paid less than a man. Many women who seek outdoor work are supporters of families which have no male supporters. They may have children, or old father or mother or again young helpless brothers or sisters. Invariably it happens that after a day's toil they do not earn enough to support themselves and their dependents.

Woman labour is thus exploited in disregard of elementary justice and humanity. There is no justification to reckon wages by sex. The considerations of sex, on the other hand, demand more lenient treatment. The fact, that women in their meekness, do not assert themselves, has been the excuse perhaps of the employer's indifference. Or it may be that women workers, helpless as they are, with nothing to fall back upon when unemployed, are driven to accept the terms of their employer, who always discounts their worth.

It is this lack of sympathy, selfish exploitation and disregard of nation's good on the part of the employers, that is driving a large section of the people to chronic poverty, moral delinquency, physical degeneration and intellectual nullity. In these days of struggle for existence and high prices, a certain minimum financial standing is necessary for a decent standard of living. When the basic needs of the body, the mind and the fundamental instinct in man are not satisfied, degeneration sets in. The morale is lowered, intellect and mind is smothered and the physiological replaced by pathological. This is what we find among our poor working class, especially women folk. And everything is traceable to the miserably poor wages that they get.

The only remedy for this state of affairs is a minimum wage law and legislation to protect women against exploitation. Wages must be reckoned on the basis of work and not sex.

Home Work.

Still another field where women work is exploited is the system of Home Work. This system prevails mostly in silk industry and to some extent cotton industry. In this field, systematic survey is difficult and statistics are not available. Yet it is but too true that the greedy merchant is sucking the life-blood of the modest hard-working women folk

in their very homes. The wages that they get for their daily toil at weaving or yarning, is utterly inadequate, and yet they have to toil on to avoid starvation. This is a field for philanthropic bodies and Governmental Labour Departments to explore and alleviate the hardships of the mute helpless workers.

IN U. S. A.

United States of America has been seeking to protect women, by legislation, against exploitation and uncongenial work. The Federal as well as State Governments have recognized the importance of protecting them as women and as mothers of future generations.

"To formulate standards and policies which shall promote the welfare of wage-earning women, improve their working conditions, increase their efficiency and advance their opportunities for profitable employment" a Women's Bureau in the Department of Labour has been established by an act of congress. Extensive investigations have been carried out by the said Bureau and its efforts has brought much comfort to the women workers.

To give one instance, as a result of a survey of the conditions of women in industry in the State of Virginia, the Bureau recommended as follows :—

"As a result of this survey, which included many conferences with employers, workers, and others interested in the subject, the Women's Bureau recommends that the following standards be established either three specific laws or three legislations empowering the State Bureau of Labour and Industrial Statistics to regulate conditions of employment."

HOURS.

(1) Women should not be required or permitted to work more than eight hours in any one day.

(2) Women should not be required to work more than one-half day on Saturday.

(3) Not less than 30 minutes should be allowed for a meal in each working day.

(4) No woman should be employed between the hours of 12 mid-night and 6 A.M.

(5) The time when the work of women employees shall begin and end, and the time allowed for meals should be posted in a conspicuous place in each workroom, and a record should be kept of the overtime for each woman worker.

WORKING CONDITIONS.

(1) Where women are employed there should be a toilet for every twenty women, and one toilet for every additional 15 women or fraction thereof. These toilets should be properly screened, should have outside ventilation, and should be kept in a clean and sanitary condition.

(2) Washing facilities with hot and cold water, soap and individual towels, should be provided.

(3) Drinking water should be cool and accessible, with individual drinking cups or sanitary bubble fountains provided.

(4) Cloakroom facilities should be provided, and provision made outside of the workroom for eating lunch and resting.

(5) Adjustable seats with backs should be supplied for all women workers.

(6) The dust protection law in Virginia should be extended to include protection in all processes involving exposure to dust and fumes.

ADMINISTRATION OF LABOUR LAWS.

(1) One or more women should be appointed in the Bureau of Labour and Industrial Statistics, with full authority to investigate conditions and enforce the laws.

(2) There should be an adequate number of inspectors to enforce the laws regulating conditions in industrial establishments.

"From experience in other States it has been found that labour legislation, to be effective, must contain certain provisions in order to make enforcement possible."

If such recommendations are necessary in U. S. A., where labour is generally better paid and has a deciding voice, they are all the more urgent in our country. Factory and large scale industries have come to stay in our country killing the more peaceful home and cottage industries ; and if we are to avoid a national catastrophe, we must immediately take measures of labour welfare. The working classes have as much right to enjoy the good things on God's Earth as the capitalist or the aristocrat ; and to deny them a decent standard of living and the basic needs of the body and instincts is to deny the existence of the elementary principles of humanity and justice. Hence it is our earnest appeal, in the name of the helpless workers and the good of the nation, to the peoples' representatives in the Legislatures to engineer protective legislation for labour welfare.

Women are the custodians of generations yet to come, and the physical and mental privations they suffer are sure to be reflected on the bodies and minds of the coming generations. The nations that have realized this and have enacted legislation for the protection

of their women are in the vanguard of progress. In the U. S. A., several States prohibit employment of women in mines, and some of them prohibit their employment in hazardous tasks; not content with such legislation, Western countries are busy with more comprehensive legislations like "Maternity Bills," "Better-Baby Bills," and "Child-Welfare Bills," which are the outcome of the abiding concern for the happiness and good of the future generations. More of this subject when we deal of child-welfare.

The problems of woman labour as discussed above vitally affect the nation. We make or mar the future of the people by the way we handle these problems and the solution we adopt. Active oppression of the labour o even indifference to their well-being is n longer justifiable. A nation awakened pol tically cannot afford to overlook the physic and social development of the nation. Soci and sociological questions must go hand i hand with political and economic. Labou problems are fundamentally the problems o the nations of man power and the only solu tion to safeguard it lies in the protection fo women against fatigue, improper workin conditions and insanitary places of work an living and low wages.

"Blessed are the poor—those who have no the spirit of riches, for theirs are the riches o the spirit." (*Paul Richard.*)

Capital Levy Criticised.

Much interest has been aroused by the series of articles on the "Capital Levy Fallacy" which appeared recently in "The Times" from the pen of Mr. W. W. Paine, the well-known banker. Mr. Paine gave the following summary of the main points of his argument in one of his articles :—

(1) Against any direct saving in interest which the repayment of 3,000 millions of the National Debt would effect there must be set off the loss of existing taxes which that amount of capital, and the income from it, at present produce.

(2) Any net saving which may be effected will be entirely lost to the revenue in the disturbance and shock to credit and in the reduction in the volume of trade which a large capital levy must cause.

(3) The inevitable effect of this reduction in the volume of trade must be largely to increase unemployment.

(4) Instead, therefore, of relieving the burden upon industry involved by present taxation a capital levy will, by accentuating the very evils which it designed to cure, largely add to that burden.

(5) The levy, as a tax, is inherently bad and unsound, because it would tax the means and sources instead of the fruits, of production. It is a tax upon the seed, instead of upon the harvest.

(6) It is closely unfair in its incidence, because :—

(*a*) From its very nature it must depreciate the sources from which alone payment of it can be made and thus double the burden which it put upon the taxpayer, and

(*b*) It directly attacks the savings of th thrifty, while letting people who have spen the whole of their incomes go free, and wi therefore deal a deadly blow to habits of thrif which are essential to our prosperity.

(7) The levy would cause such a disturbanc of credit as would certainly endanger, an probably destroy, the position of this countr as the central money market of the world which, in spite of the war, it still maintains.

(8) The collection of the levy would entai a vast burden of labour and expense upo both the taxpayers and the State.

More than usual interest attaches to th nomination for a Bank of England director ship of the Hon. Roland Dudley Kitson D.S.O. A vacancy was caused in the Bank directorate by the death of Mr. R. E. Johnston The election of his successor will take place o Wednesday next. Mr. Kitson's nomination re presents a breach with the tradition that th Bank's directors should be drawn from the leading London financial and banking houses Mr. Kitson is closely identified with the iron and steel industry, for he is a director of Bolckow Vaughan and Co., the Monk Bridge Iron and Steel Company, and Bacares Iron Ore Mines He was also a member of the Board of the North Eastern Railway before its amalgamation The nomination therefore carries the impli cation that a more direct representation o the great manufacturing industries of the country on the Bank Court is now felt to be desirable, a view which is likely to meet with general approval.

America's Foreign Trade and Investments Abroad.

By Virgil Jordan.

The course of exports and imports, the remarkable export of capital, and the gold movement in the past year—for all of which fairly complete information is now available—raise some interesting questions regarding the future relation of the United States to economic and political conditions in Europe. From the record for 1922, as compared with that for the two preceding years since the close of the war, it seems probable that the United States is gradually but surely adjusting herself to a new position in world economic currents, a position strikingly different from that she occupied before the war. The indications are slight to be sure, on the basis of only three years' history, but they suggest that the United States is passing, or has passed, out of the stage of her history where her chief relation to Europe was as an exporter of raw materials for Europe's industries to the stage where she will be building up competition for herself by exporting capital to develop the industries of other countries, and will be interested in them primarily as a source of capital income. If the tendencies of the past three years are at all prophetic the United States will become less and less concerned with Europe as a market for her products and more concerned with her stability and productivity from the point of view of capital investment. This decreasing emphasis on foreign trade and the increasing emphasis on the productivity of investment abroad will carry with it inevitably a changed attitude in foreign relations.

Though there was a marked rise in American exports in the last three months of 1922, the total exports for the year, which amounted to $3,832,000,000, were $654,000,000 or fifteen per cent less than in 1921, and about fifty-three per cent less in value than in 1920. The showing is somewhat better when quantities are compared, the exports for the first eleven months of 1922 having been only five per cent under 1921 in quantity, and fifteen per cent below 1920. But, despite the apparent improvement toward the end of the year, the foreign trade outlook is still most uncertain. The recent rise was due almost entirely to exports of raw materials, particularly cotton. The exports of manufactured goods in the last half of 1922 failed to maintain the promising advance made in the second quarter of 1922. The slump is particularly marked with respect to iron and steel products, boots and shoes and locomotives. Total iron and steel exports for 1922 amounted to $188,841,000 in value as compared with $323,667,000 for 1921. This was only about five per cent of the entire domestic production. The Ruhr occupation is reported to have considerably increased export demand, but the prospect is still not up to the expectations of the steel industry.

The other side of the picture is seen in the steady increase of imports. While exports decreased $654,000,000 last year, imports in the first ten months increased by more than $500,000,000. This increase of imports has so far been unaffected by the new tariff law, though figures for more than one month under the new law are not yet available.

The outstanding feature of the trend of exports and imports in 1922 is the continuous decline in the balance of trade through 1920, 1921 and 1922. In the past year the huge balances of trade which have marked the foreign trade situation since 1914 have been definitely wiped out. It is not unlikely that the United States may even witness an excess of imports during the present year or the next, but this will depend largely upon the ultimate restrictive effect of the new tariff, the possibility of recovery of export trade and the international movement of capital and gold.

It is clear at least that American export trade is not very soon again going to figure so largely or in the same way either in domestic economy or in world trade currents as it has in the past, and it may be said that the appreciation of this probability is reflected increasingly in the waning interest in the problem of foreign trade. The export market is not so definitely looked to as a panacea for all the industrial and business ills of the country as it used to be. The increased needs of the rest of the world for new capital have turned American attention somewhat away from the possibilities of foreign trade toward a more immediately promising activity, that of being the world's banker.

In the first place, there has been, in the past year, an inflow of gold into the United States on a scale unprecedented in the history of the country, or of any country. Our gold imports in 1920, 1921 and 1922 amounted to

$1,383,000,000. Part of this influx represented payments on old debt account, and part foreign government debt financing. It is unlikely, however, that this movement can keep up much longer, and soon this mountain of accumulated gold must flow out, either in paying for increased imports or in further capital investments abroad.

It is probable that most of it will go out in the latter way, if the record of the past year is any evidence of the tendency. The foreign securities floated in the American market in 1922 exceeded those of any year since the armistice, amounting to $652,000,000, or more than $56,000,000 in excess of the former record year 1921 and more than double the total of $301,000,000 reported for 1919. About $483,000,000 of this went for issues of national governments and municipalities, and $169,000,000 for corporate purposes. Most of both corporate and government issues went to Europe, though the Far East was well represented in the government issues. This vast export of capital represents an enormous increase since 1911, of from thirty-one millions to 652 millions, while at the same time there has been a decline from about 503 millions to 276 millions in new capital sent to foreign countries by England. England and the United States have thus changed positions in this regard, the United States in 1922 exporting more capital than England did in her record year.

Of special significance in this outflow of capital during 1922 is the fact that very little of it took place during the last half of the year. Unsettled political conditions in Europe made themselves felt very forceably in this regard, and probably aroused more attention on this score than they did in relation to the decline of foreign trade. In any case, the multiplication of these direct financial bonds with both foreign governments and industries raises the question as to what effect upon foreign policy this new interest of American investors may have. It may very well be that the type of interest in European affairs resulting from these increasing bonds of capital investment will differ greatly from the interest in Europe which America had as an industrial nation concerned chiefly with the development of foreign markets and the promotion of sound economic prosperity as a basis for larger exchange of goods between peoples.

Bombay's New Woollen Mill.

Before the war India possessed only five woollen mills of importance. The material turned out was of somewhat irregular texture, and manufacture was exclusively confined to coarse cloth, there being no scope for the disposal of finer fabrics. Since the war, the industry has made good progress, and to-day there are fifteen large and small woollen factories in India.

The mills in Cawnpore, Bombay and Dhariwal (Punjab) are beginning to compete with British imports even in the finer serges, while those at Agra, Mirzapur, Amritsar, and in Cashmere, which specialize in producing carpets and rugs, are improving their productions and methods of distribution.

The opening of the Wadia woollen mill on March 21, at Panchpakadi in Thana, near Bombay, is an event of much importance, especially as the mill is equipped on the most up-to-date lines. It has good prospects of competing with British concerns, under the highly efficient management of the Wadia firm, famous in India as the pioneers in the cotton mill industry. The plant comprises a complete woollen department of six sets of woollen cards with 2,280 mule spindles, a worsted department with a complete wool washing and drying plant, 11 worsted cards, 10 wool combs, 10,400 cap spindles, and 4,800 ring doubling spindles. The weaving department contains 228 looms, 148 of which are dobby looms to weave from eight to 24 shaft patterns. There is a large finishing department to handle every possible quality from coarse blanketing to the finest cashmere. There is also a dye house capable of handling the whole of the mill production.

A special feature of the mill which is new to India is the velvet department, comprising a plant of 100 looms, designed to turn out cloth such as suitings, dress goods, alpaca, etc., for which India has now to depend wholly upon imports. The mill is the first of its kind on this side of the Suez Canal.

The mill gets its supply of raw material from Northern India, Afghanistan, and Australia. Its principal customers are at present the Government of India and the G. I. P. Railway.

Cotton Growing in India.*

By Mr. W. H. Himbury, General Manager of the British Cotton Growing Association.

To sum up the position generally, India being already a large cotton-producing country, the real question to be decided is, primarily, can cotton of a type equal to American be grown in large quantities economically, and if so, what parts are the most suitable for its cultivation? This question cannot be dealt with straight off, evidence for and against having to be carefully weighed. The real trouble in India is that there is a short growing season which is largely against those types which are of longer growth in maturing. When Indian cotton is being produced nine months out of twelve in India there is always some trouble. As for example, in rain-grown areas the rains are not well distributed; in others, after a few months, serious insect pests appear; and in the irrigated areas north there are frosts, so that generally the season is a short one, and this is the main reason Desi and other Indian cottons of a short staple are more certain and more popular with the cultivator. In view of this fact, one has to choose the district likely to prove the most favourable, and naturally one turns one's attention to the irrigated areas of the Punjab and Sind, the only real trouble being the advent of frost; but by very careful selection and breeding the Agricultural Departments have evolved a type or types which may be considered quite satisfactory for a start. The first is known as 4F, and the others 285F and 289F. The last two arrived after the 4F, and are an improvement.

Having decided upon the type, there are still a few other difficulties to be got over. We have a competitor in Desi, which gives a large yield per acre, from 25 per cent to 30 per cent more Kapas, and a higher ginning percentage plus a shorter growing period, which even in the Punjab is important, because the farmers, instead of using the last watering for their cotton, can use it for sowing the early winter wheat, and this is not possible with the American type. Everything, however, is not always in favour of Desi, because should the type get a set-back in the early stages the crop is permanently affected, but with American this is not so; owing to its later flowering and fruiting, it has been known to give a good second or third picking, whilst the native early type has failed, so that here you have a point distinctly in favour of American. Another factor against the American is the difficulty the grower has to get any improvement in the price paid for his seed cotton, and yet again very little of the improved cotton actually reaches the spinner unadulterated, so that he is quite unacquainted with the type, which can be grown, otherwise he might be inclined to pay a higher price for it. Again, you meet with people, sometimes merchants or spinners, who do not want improved cottons; they use the present short types, and are afraid of their supplies. One might find a similar feeling amongst certain sections of the trade in England if a campaign was started to grow all long-stapled cotton of the Egyptian variety, so that this criticism has to be listened to and answered. Nevertheless, after a very careful survey of the whole question, and judging from what I have seen myself and heard from reliable authorities, I believe India can and will produce a good quantity of cotton of 1 1/16 in. to 1⅛ in., and that the most suitable areas will be the Punjab and Sind. Of course, the Central Provinces or Madras Presidency will do a good deal, but the Punjab is larger and more certain. Here you already have ten million acres of land under canal irrigation, one of the largest areas in the world, and this is being added to immediately, the work being in progress, so that shortly a further million acres will be available for cotton, wheat, etc. Irrigation in the Punjab is giving the Government a good profit, in spite of a low water rate, which could stand, if necessary, an increase. In addition, you have an area in Sind, which, if provided with water by barrage, would give a further half-million acres of cotton land suitable for growing the best type of American.

What is required in India to produce a large and increasing supply of the better staple is (1) continued experiments by experts to produce still more prolific and earlier maturing cotton; (2) the seed of the present types to be kept pure until such time as something better can take its place; (3) the grower should receive a price more in accord with the real value of his product; (4) something must be done to prevent the mixing of the

*Part of the Report presented by the writer after his recent tour in India.

American seed cotton with the Desi at the ginnery or whilst in the merchants' hands. Mixing is openly done; no secret is made of it, but the effect is harmful in the extreme. The formation of the Indian Central Cotton Committee is most opportune. I feel sure it will do good work. It is composed of able and representative men. I hope, however, they will not mind a suggestion, and that is: always to keep in mind the very great necessity for augmenting the staff of the Agricultural Departments by adding to it men with first class knowledge who can devote their time to cotton, as with the economy axe at work and the Indianisation of the Services this is more necessary than ever. They should also pay attention to the marketing, so that the grower gets his money for the better article, and some real effort must be made to stop the scandal of mixing with inferior cottons.

Finally, the problems, whilst difficult, are not incapable of solution, and I am optimistic enough to say that if the business is properly tackled in five years, India should produce six million bales of cotton, two million of which should have a staple of 1 1/16 in. against the present production of five million bales, not quite half a million of which come under the higher class.

The British Budget.

The British Chancellor of the Exchequer in his budget statement in the House of Commons on Monday announced the following reductions in taxes, duties and postal rates :—

Income-tax.—Standard rate from 5sh. to 4sh. 6d. in the £.

Corporation tax.—From 1sh. to 6d. in the £ as respects profits arising after June 30, 1923, and a proportionate reduction in duty payable under proviso (b) to section 52 (1) Finance Act, 1920.

Customs and Excise.—Rebate of £1 per bulk barrel of beer (present Excise duty, £5 per barrel), the existing duty on any beer not to be below 24sh. per barrel. The £1 rebate also applies to the customs.

Duty of 4d. per gallon on cider and perry repealed; duty of 4d. per gallon on table waters (sweetened or fermented) reduced to 2d.

Postal rates.—Inland letters (now 1½d. up to 1 oz. and 2d. up to 3 oz.), 1½d. up to 2 oz. and ½d. per additional 2 oz.

Empire rate and U.S.A. (now 1½d. up to 1 oz. and 1½d. per additional oz.), 1½d. up to 1 oz. and 1d. per additional oz.

Foreign (now 3d. up to 1 oz.), 2½d. up to 1 oz.

Inland printed papers (now ½d. up to 1 oz. and 1d. to 2 oz.), ½d. up to 2 oz.

Inland parcels (now 9d. up to 2lbs., 1sh. 5lbs., 1sh. 3d. 8 lbs. and 1sh. 6d. 11 lbs.), 6d. up to 2lbs., 9d. 5lbs., 1 sh. 8 lbs. and 1 sh. 3d. 11 lbs.

Postal reductions to become effective from May 14.

Telephone.—Annual rental reduced by 10sh. local messages at public call offices, 3d. to 2d. lower charge for extension instruments.

New rates to begin on July 1.

Mr. Baldwin announced, as the main proposal of the budget, that the allocation for the Sinking Fund this year would be 40 millions with five millions more next year and a similar addition in the following year. He stated that the proposal to put a tax on betting would be inquired into by a Select Committee.

South African Industrial Policy.

Speaking at the annual general meeting of the Port Elizabeth (South Africa) Chamber of Commerce on March 19, the president, Mr. Harraway, in the course of a comprehensive and instructive review of the economic situation, said that the South African Federated Chamber of Industries was prejudicing its own interests by demanding too much. Excessive duties on agricultural and mining machinery could not be tolerated in South Africa, as they would retard the development of its premier industries and offer no *quid pro quo*. Many of the Federation's suggestions were impracticable; they needed sound industries and must inspire the confidence of the overseas investor, who should not be deceived. Many industries were making admirable progress and were entitled to credit. Port Elizabeth was producing boots of a most excellent description, a credit to South Africa or any other country, but surely the industry could thrive without embargoes or prohibitive duties.

Management of Indian Railways.

By Sir Robert W. Gillan, K.C.S.I.

Money, we are told, is the root of all evil, and it is so on Indian railways. For their finance, Indian Companies are in the hands of Government, and it is true that Government can destroy their initiative by refusing them funds. If we consider the financial policy of Government in the past, here are two examples. A Committee under Lord Inchcape was appointed to advise the India Office as to the best way of raising the money required for Indian railways; it was a strong financial committee, and it recommended among other things that the Companies should be allowed to raise additional share capital; this, they thought, would be an advantageous alternative to Government loans and debentures, and, while enlarging the interest of the Companies, would increase the total amount of money available. On another occasion the South Indian Railway put forward a proposal for raising money without a guarantee from Government. But whatever their theory may be, Government do not always act as if they wished to foster private enterprise; they do not seem to like sharing profits with other people, and they have never acted on the recommendation of the Inchcape Committee, while they refused the application of the S.I.R. I may add that the Companies have never been allowed to raise a rupee of capital in India. That fact is more relevant in another connection, but you will easily understand that in consequence they are looked on as strangers and foreigners, and that Indian opinion, while it has nothing to say apparently against the small indigenous Companies which have financed what are called feeder lines, is all for the State management of these larger Companies.

Admitting, then, that the trouble is finance, what is the remedy?

So long as Government has an immense financial interest in the railways, it must be allowed to control the financial policy, and if this control is evil, the only complete remedy is for the Government to sell out its interest. I do not know why that should be an impracticable operation but it is not practical politics.

Sir William Acworth's remedy is State management. That seems in the first place a counsel of despair; for, however, bad things may be under the present system, they would only be made worse by the elimination of the Companies. But there is a further objection. To remove the financial difficulties which have been felt in the past, Sir William Acworth proposed the separation of the railway from the general Budget of the Government, and to this proposal he attached so much importance that he made it a condition precedent to the adoption of State management. But the condition has already been considered and rejected by the Government, so that the scheme of the Committee is left in the air. Besides this, the proposal seems to lead to a dilemma. For if the State has the ultimate decision, as it seems to me it must have, regarding railway funds, the proposal is unsubstantial, and if the intention is somehow to convey away railway moneys beyond the power of interference by the Government, the scheme cannot be described as State management. You have, in fact, merely substituted a Railway Department for a Railway Company and given it the very independence the want of which is the gravamen of the charge against the present system of company management.

Then there is the scheme propounded by that half of the Acworth Committee who were opposed to State management. They were for the continuance of Company management, but proposed a new constitution for the Companies. Taking the case of the E.I.R. as an example, they suggested that the capital of the new Company should be formed, first of a sum, say, 130 crores, representing the value of the undertaking, which would be the Government share; secondly, the new authorized share capital of, say, 50 crores, of which perhaps half might be called up in the first few years, a certain return to be guaranteed on the public share capital, and after credit of a like return to Government, the surplus profit to be divided in proportion to the amount of State and private capital in the concern On the Board of Management there were to be five Government Directors, five elected by the shareholders, the Chairman nominated by the Government, to have a casting vote. This scheme gives effect to an idea that has had considerable vogue, namely, that the interests of the Government in railways should be given effect to by treating it as capital in a Company jointly with further capital subscribed by the public. That idea, however,

seems to me a mistaken one. No advantage, so far, as I can see, is gained over the present system, and, at the same time, the real Company element is swamped by the Government element, so that the result is really State management in disguise.

This survey of the suggestions that have been made may bring us to a conclusion on this part of the subject. The real drawback in the present system is its liability to financial derangements if the Government fails of wisdom in its powers of financial control. But the only method by which this evil could be eradicated—that is, the sale by the Government of its interest in the railways—is impossible; the other plans suggested only make it worse. The wise course, therefore, I submit, is to continue in essentials the present system. That this system is capable of improvement is certain. The Companies ought to have greater financial independence, and there is no reason why it should not be given them. In nine cases out of ten it is better to work for improvements rather than for revolutionary changes, and in the present case the revolution proposed—that is the change to State management—is not merely a step untried and of uncertain event but has been proved time and again to be destructive.

Paper in Australia.

Mr. H. E. Poole, a director of Messrs. B. J. Ball, Limited, of Australia, whom he is representing in London, has a very close acquaintance with the paper trade of Australasia. He has been good enough to furnish the "World's Paper Trade Review" with some observations regarding the tariff arrangements which are now in force in the Commonwealth. This is of some interest to India, where the duty on imported paper has been introduced. Mr. Poole explained the fiscal policy of the Commonwealth. At the present time the Australian tariff provides for a duty on foreign printing paper (including news-print) of £3 per ton, while British is free. Other rates of duty are: Manifold, 10 per cent foreign, British free; wrapping £10 per ton foreign, £8 per ton British; writing paper, 15 per cent foreign, 5 per cent British; cartridge, blotting and duplicating paper, etc., £10 per ton foreign, £8 per ton British; surface papers, etc., 10 per cent foreign, British free; gummed paper, 30 per cent foreign, 20 per cent British; cover papers, 40 per cent foreign, 30 per cent British; boards 40 per cent foreign, 25 per cent British; manufactured stationery, 40 per cent foreign, 30 per cent British, and so on.

There is one special provision in the Australian tariff which is interesting as illustrative of the policy of protection. Certain goods, such as bag reels, etc., are allowed to be imported free of duty if used under departmental bye-laws for manufacturing purposes. Paper for printing, however, is not considered under this head. An interesting possibility, from the writing paper manufacturers' point of view, is the provision for the increase of duty on writing paper after July 1st to 30 per cent foreign and 20 per cent British. This surely must be purely for revenue purposes, for it seems unlikely that Australia will be able to make anything but the lower grade writings for generations to come, if ever.

The New Zealand tariff is much simpler than the Australian. For instance, all British and Canadian printings, writings, covers, flints, box enamels, and gummed papers are duty free, whereas the same lines in foreign manufacture are subject to 20 per cent duty, in addition to which there is a provision whereby any depreciation in exchange is balanced by a corresponding duty imposition. This latter provision is also embodied in Australian legislation. In regard to boards, in New Zealand all are free, whether British or foreign, and the same applies to greaseproof and parchment papers.

Concerning the manufacture of paper in Australasia, Mr. Poole said:—

There are some extensive paper mills established in Sydney, Melbourne, and in New Zealand. Here excellent kraft wrappings, glazed sulphites, cartridge papers, cover papers, some news-print, and low grade cream-laids are made.

Besides all this, the Government Bureau of Science and Industry has an experimental plant in Western Australia, where they are testing our own woods and grasses.

Up to the present, most Australian paper is made from imported pulps, though there is little doubt about the capabilities of many of our woods and native grasses for paper-making purposes. Besides these there is Megasse (the fibre left after crushing the cane), from the sugar mills, thousands of tons of which

are burnt in the mill furnaces. Again, vast quantities of straw, from our wheat growing areas, are now burnt on the fields. But the difficulty is that this raw material and the necessary water are seldom to be found in close proximity. Moreover, it is an established axiom in Australian labour circles that "where an industry cannot pay a living wage, the industry must go." No one can quarrel with this axiom; but it often kills an industry, for be it remembered that the living wage is fixed by that governing other established industries which have long passed the costly experimental stage.

Should you endeavour to make pulp in North Queensland for instance, where you have the native grasses and water, you would have to pay the highest wage for rural workers, and you would pay freight on one of the most expensive and steepest railways in the world and have it handled on to ships manned by the highest paid sailors in the Empire by labourers drawing more than skilled workers' wages, and then stand the freight of a 2,000 miles' voyage to a paper mill. Mr. Campbell, a most enthusiastic worker in paper research, is faced with these difficulties in endeavouring to establish the pulp industry in the Cairns district.

It must be remembered that our great difficulty is water. I was astonished the other day while visiting a mill in the midlands to find the reservoirs being continually replenished from drainage from the surrounding country. In Australia our soil is frequently 60 feet deep, on to which the rain falls, and into which it disappears as into a sponge. Our artesian bores yield highly mineralized water, quite unsuited for paper making; and apart from this, water secured in the coastal districts by well-sinking would be too expensive, and small in volume.

I believe it would be possible to establish paper-making in some of the mountain districts of Victoria, and in Tasmania; for one of the big paper mill managers of the U. S. A. assured me that he had made splendid paper from eucalyptus, one of our most famous hardwoods.

So that summing up, our tariff is more revenue producing than protective. By the way, it mght be remembered that all of our duties are *ad valorem*; in other words, we pay duty on duty (so that 20 per cent *ad valorem* means 24 per cent actual). Furthermore, our tariff is designed especially to foster trade with Great Britain, which is our most favoured market, both sentimentally and practically.

Book Making Industry in America.

In the heart of a mountainous Tennessee wilderness, at the centre of the book-buying population of the United States one of the world's greatest printeries has been completed, writes a "New York Times" correspondent. Its daily capacity, including the output of specially made machinery, will be 100,000 volumes. Moreover, for the first time in history the business of book-manufacturing has been integrated.

The Kingsport Press is the core of what Hugo Stinnes would call a "vertical" industry. It is not within single management but friendly groups own its units. They own forests near at hand, which will supply paper pulp for the next ninety years. They own abundant coal fields forty miles from the printing plant. They control the railroad running through Kingsport, on which this coal and books must be moved—the only railroad which crosses —or punctures—the Appalachians. They own paper and pulp mills, glue and ink factories, a cloth-finishing plant, book-bindery and plate-making and shipping departments. The things which go to make a volume need no longer be assembled from many diverse quarters. In effect, the physical book is to be brought out of the earth itself, with the source of power and the raw material close at hand.

Correspondence has been proceeding between the Government of Jamaica and the Colonial Office on the subject of a continuance of the system of loans to sugar planters in the colony. Planting interests desire that the Colonial Government should continue to guarantee loans by commercial banks doing business in the island for another two years at least. A resolution to this effect was passed by the Legislative Council last November, and the Government were preparing to introduce legislation to give effect to the Council's decision, when instructions were received from the Colonial Office that before proceeding the Local Sugar Board must ascertain how the assisted estates are likely to stand at the end of the current "sugar year." The decision has caused a good deal of disappointment.

The Electric Furnace for Iron and Steel Works.

By T. Sington.

Within recent years a new type of furnace has been introduced and erected in many engineering works as well as steel and iron works experimentally:—the electric furnace in which coal and charcoal are entirely dispensed with and electric current, or resistance substituted. That is in effect, whilst no coal is used directly in the furnace, it has to be used indirectly to produce the electric currents. These furnaces are constructed above ground, not below as in the case of the crucible furnaces. Expert opinions are by no means unanimous on the question whether the electric furnace will supersede either the convertor or the crucible; it will, in all probability, be used as a supplement and may be found very useful, without the older types being scrapped. Older experts who have used the crucible furnaces throughout their professional lives contend, that they are indispensable for the making of the highest class of alloys and high speed steels and that with the continual development of engineering and the growing demand for higher and higher standards, the crucible with its small melts is superior to all other types. There are several varieties of electric furnaces, they are all alike in principle, but differ greatly in detail; it is claimed for them, that they are the ideal type of what a furnace should be; but there are, it is alleged, sundry deficiencies or imperfections, which, however, will be eliminated in time. It remains to be seen which of these two currents of opinion will prevail.

The chief imperfections in electric smelting are, it is stated, the improper delivery of the electricity, faulty design in the shell and the parts of the furnace, also the want of absolutely satisfactory linings and electrodes; there is alleged to be also a difficulty in fixing the correct combinations of materials. Not only electrically, but also chemically and mechanically there is, in the opinion of many experts, still much room for experiment and research in connection with the smelting of iron and the smelting and refining of steel.

It cannot be asserted that the present methods of delivery or supplying the electrical energy to the metals is the best that could be devised; it will no doubt be improved upon. Are the details for the exclusion of cold air the best, which can be devised? Retaining and maintaining the heat are most important points in the daily working of a furnace; economical manipulation is another; also the proper percentage or combination of the materials for the melts. Until perfection has been reached in every one of these points, the electric furnace cannot claim and maintain superiority over all other types of furnaces. To quote a critical expert:—"The electrical side of the problem depends not only upon the supply and cost of current, but upon its proper application to the raw materials, upon the nature of the refractories and upon the electrodes and the furnace linings, as well as upon the size and shape of the furnace in relation to the materials used. On the mechanical side such points in design as the provision of the least possible radiating surface, the minimum amount of strain on the refractories, the control of the "boil" and the ease of the "teem", the class of lining and the kind of electrode have all yet to be brought to the stage when it may be said, that the electric furnace is perfect."

The furnace linings are likely to constitute a weak point; they are all important as the life of the furnace depends on them; two types are available: acid and basic; they depend upon the degree of heat required for the particular quality of product. Passing on to the refractories on which the heat production depends, there is the choice of graphite or carbon. A comparatively low temperature suffices to melt down steel scrap for the production of low grade castings, a much higher one is required for refining high class steel; for the former an acid lining of silica suffices, but for the latter superior work a basic lining of magnesite is considered necessary. As regards the electrodes carbons and graphite both have their strong and weak points, the former has the advantage as regards price, but has a smaller carrying capacity than graphite; but in choosing between them the product required and the type of furnace have to be taken into consideration. From these details it is evident that there are complications in the design of the electric furnace from which the crucible system is free, consequently the advantages offered by the former will have to be very great before it will supersede the crucible system.

We have now in this country about 160 electric furnaces, most of them are devoted

to steel melting and the others to the production of ferro alloys. Probably one-third of the furnaces are of the Herault type, but there is a great choice of types including the Greaves-Etchells, Electric metals, Sugder, Stabic Rennerfelt and Stassano; more recent types are the Northrays, the Booth-Hall and the Sahlin; obviously many inventors have studied the problem. The electric furnaces now erected in this country, if fully engaged, could produce 400,000 tons per year, approximately equal to one ton per week each. There would probably be a larger number of electric furnaces in this country if capitalists could be assured that there would be no delays due to breakdowns, and that the tilting gear and the general arrangement of the electrode feed gear could be made more perfect. No doubt, efforts are being made to improve these details. The cost of electric power is the all-important factor, as electric furnaces require great quantities of electric energy; cheaper rates seem scarcely likely. There are engineers for Sanguine as to expect that the provision of the exceptionally large generating stations would bring down the cost of power so considerably as to make the working of electric furnaces more economical than that of other types. Only water power on a large scale will bring down the cost of electric power and that we unfortunately do not possess in this country, except in minute quantities. Assuming the rate charged to approximate to a penny-farthing (2½ cents) per unit the melting cost per ton of output of an electric furnace would be about £3—10—0 ($16.80); with water power available the cost might be 12 to 15*sh.* ($2.88 to $3.60). It is claimed for electric furnaces that they possess the advantage of more ready removal of sulphur and iron oxide from the molten steel, as the air within is clear of sulphur, obviously present when coal or gas is used, whilst oxygen is only present in reduced quantity. To quote an expert:—"This freedom from oxygen is the indirect reason why the molten metal can be freed from mechanically suspended slag more perfectly than in the Bessener Convertor or the open-hearth furnace."

A small type of electric resistance furnaces is being introduced in the U.S. holding 200 lbs., 750 lbs. and 2,000 lbs., built on the nose-tilting principle in connection with a casting table on which moulds are mounted so that the metal can be poured directly to the moulds without a ladle. By such means a uniform temperature throughout the pour is obtained and it makes the pouring condition analogous to that of the crucible practice. The maximum temperature obtained and maintained in a furnace of the resistance type and in keeping steel of as low carbon content as 0.05 per cent at a good pouring temperature has been as high as 1850 degrees centigrade. When this heat is attained the magnesite lining may commence to volatilize. The current consumption should not exceed 1200 kw. hr. per ton, which is much higher than the figure obtained in arc practice. It is claimed that the steel is produced more economically than by the crucible system. These furnaces have the further advantage that the atmosphere is under better control than in furnaces of any other type.

Housing Loan of the City of Vienna 1923.

From the reports of the Municipal Meeting of February 6th, 1923, we learn that the Municipality of Vienna has entrusted a number of leading banks with the issue of a housing loan to the nominal value of ten milliard kronen, the proceeds of which are to be used for an extension of the housing scheme of the Municipality of Vienna. From these funds the buildings, which were begun last year, are to be finished and new buildings and dwellings will be built in various parts of the town, and it is hoped a great number of dwellings will be erected. The loan bearing 5% interest is redeemable within 60 years and cannot be recalled during the first ten years. The first coupon is due on October 1st, 1923. The Municipality of Vienna will set aside part of the receipts from the housing tax, the annual proceeds of which is estimated at 36 milliard kronen (in round figures) to provide a special cover for the interest and for the repayment of the capital. Trustees will be permitted to invest in this stock. An application has been made to the Austrian National Bank for the purpose of having the stock declared a security and the Vienna Stock Exchange has been approached with a view to the official quotation of the issue. The price of issue for the time being is fixed at 102 tel quel for 100 kronen nominal. Subscriptions may be made at all banks, banking-firms and savings-banks.

Financial Aid to Building Co-operative Societies.

By the Editor.

In their order No. 512, Development, dated 11th April 1923, the Madras Government state that they have been considering the question of granting financial assistance to Co-operative Building Societies organized for the benefit of the poorer and middle classes in urban areas. They have now decided to grant loans to such societies during 1923-24 to an extent of Rs. 4,00,000 for which provision has been made in the budget. The grant of these loans and the recovery thereof will be subject to the rules annexed to these proceedings.

ANNEXURE.

Rules for the grant of State loans to Co-operative Building Societies.

The Government of Madras are prepared to grant loans to Co-operative Building Societies to an extent of four lakhs of rupees during 1923-24. The grant of these loans will be regulated by the following rules :—

(1) Only societies which are registered under the Co-operative Societies' Act and which confine their membership to the poorer and middle classes and their operations to urban areas will be eligible for a loan from the Government. The question, whether a particular society is eligible for a loan under this rule, will be decided in each case by the Registrar of Co-operative Societies and his decision shall be final.

(2) No society shall be eligible for a loan from the Government exceeding three times its paid-up share capital if formed on the individual ownership system or exceeding eight times its paid-up share capital if formed on the co-partnership tenancy system.

(3) No loan shall be given to a society except for the construction of new dwelling houses.

(4) The rate of interest charged by Government on all loans granted to building societies in 1923-24 shall be 6½ per cent. A penal rate of 10 per cent will be charged on all overdue instalments of principal or interest from the due date to the date of actual payment.

(5) The period, within which a building society formed on the individual ownership system must repay any loan or loans made by the Government shall not ordinarily exceed twenty years, but the period may, in special cases, exceed twenty but not thirty years, on the recommendation of the Registrar. In the case of societies formed on the co-partnership tenancy system, the period shall not ordinarily exceed thirty years. These periods exclude the time taken for completing the building as fixed by rule 10 and the period of one year referred to by rule 9.

(6) Every loan, made by Government to a building society, will be a first charge on the society's assets. The society shall transfer to Government its interest in the mortgages obtained from its members or in the buildings constructed out of the Government loan.

(7) Every society to which the Government have sanctioned a loan shall draw the money in instalments, as the work of constsuction of houses progresses. The second and subsequent instalments shall, subject to the conditions laid down below, be paid only on receipt of a certificate to the satisfaction of the Registrar or the Assistant Registrar having jurisdiction over the society from the managing committee of the society that the instalment or instalments already drawn have been properly utilized and that the work actually done together with the value of the land bought up to date represents expenditure exceeding by at least 25 per cent the actual amount already drawn. If in any case the Registrar or the Assistant Registrar considers that an independent certificate is necessary, the society shall arrange to get such a certificate from a qualified engineer of rank not lower than that of an upper subordinate of the Public Works Department approved by the Registrar or Assistant Registrar for the purpose. If, for any reason, the whole amount sanctioned to a society cannot be drawn before the close of the financial year in which it is sanctioned, the society shall be entitled to take the balance outstanding from the loan allotment sanctioned for the subseuuent years, at the rates and subject to the conditions in force when the first instalment of the loan was drawn

(8) A society which has taken a loan from Government shall repay the amount together with the interest due thereon *either* by equated annual instalments *or* at its option in annual instalments together with interest due on the amount outstanding from time to time. After exercising its option a society shall not ordinarily be allowed to change its method of repayment. If the society elects to pay by equal annual instalments, it will be allowed to make repayment to Government at any time before the due date whether of whole instalments or part instalments. All the members of the society shall repay their loans and interest due thereon to the society either on the system of equated payments or on the equal instalment system, according as the society itself has elected the former or the latter system.

(9) Repayment of the first instalment of every loan made by Government to a society under these rules will fall due on the expiry of a full year from the date on which the buildings for the construction of which the loan is granted are finished or of thirty months from the date of disbursement of the first instalment of the loan whichever is earlier.

(10) The buildings for which a loan from Government has been obtained shall be commenced within three months and completed within eighteen months from the date of disbursement of the first instalment of the loan to the society.

(11) The interest due to Government shall be payable annually along with the instalments of principal, But the interest accrued up to the date of completion of the buildings for which a loan is granted shall be payable in a lumpsum on the completion of the buildings or on expiry of eighteen months from the date of disbursement of the first instalment of the loans whichever may be earlier.

(12) Every society receiving a loan from Government shall agree to an annual inspection and valuation of the buildings constructed out of the loan

from Government. The inspection and valuation will be made by a Government Engineer of rank not lower than that of an upper subordinate of the Public Works Department free of cost to the society.

(13) Every society receiving a loan from Government shall furnish such information and submit such returns as the Government or the Registrar may call for from time to time.

(14) Every society receiving a loan from Government shall make provision in its bye-laws:—

(*a*) Prohibiting the alienation by any member of the house or houses (and the site or sites) on the security of which he has obtained a loan or loans from the society except to another member of the society or to a person whom the managing committee of the society is prepared to admit as a member;

(*b*) fixing the maximum borrowing power of the society at not more than three times its paid-up share capital and the maximum borrowing power of a member at not more than four times his paid-up share capital;

(*c*) making its shares non-withdrawable. But after the outside liabilities (including the liability to Government) of the society have been reduced to an amount equal to, or less than, its paid-up share capital a member may be permitted to withdraw a portion of his share capital provided that at no time the total paid-up share capital of the society shall fall below its outside liablities and provided also that no member shall be permitted to withdraw in all more than 75 per cent of his share capital;

(*d*) prohibiting borrowing by the society either in the shape of deposits or otherwise except from members.

We trust the Government of Mysore will pass similar orders and make annually a like sum (Rs. 4 lakhs) available to approved Building Co-operative Societies working in urban areas. The Government of Mysore, not long ago, passed orders that they were prepared to render financial assistance to societies of this nature. Very little, however, has been done in the matter so far and it is to be hoped that despite the present financial stringency, the Government of Mysore will provide some funds for the purpose in their next budget. Otherwise the societies in the State engaged in this important work, will languish away. We trust that this will attract the attention of Government.

Mr. Robert Blatchford, commenting in the *Sunday Chronicle* on Mr. Henry Ford's recently published book, *My life and work*, says:—"I am an old Socialist and spent many years in trying to find a way out of our industrial morass. Mr. Ford has found a better way. His way is in closer touch with human nature, is more harmonious with the facts. He has found in time what I found too late, that the masses of the people, spoken of as the wage-earners, or the wage slaves, or the workers, are a figment of the enthusiastic reformer's brain. Democracy is described as the rule of the majority. But the fact is, the majority do not want to rule. They will not take the trouble, they are incapable of the effort, they do not want to be "bothered." What they do want is a fairly comfortable and not too laborious living, with plenty of simple pleasure and amusement. The masses are not ambitious. They prefer to be directed and led. And Mr. Ford shows the majority of workers do not hunger for a better job with more brain work and more responsibility. They prefer a regular and tranquil life." With regard to Mr. Ford's industrial achievement, Mr. Blatchford says: "No State-controlled or communal business could produce such results," and he adds: "We cannot succeed in war or business by a control of committees, not even committees of Fords and Fochs. The true way is to put the one Ford or the one Foch in command."

The trade in skins through Aden during the year 1922 showed a considerable increase as compared with the previous year (says an American Consular report). The increase in imports alone amounted to over 540,000 skins. This trade was particularly active towards the end of the year, when prices reached a point unheard of in the history of Aden. Among the chief contributors to the large imports are the Red Sea ports, which sent in 1,875,600 skins; Jibuti which sent 1,248,740 skins; and Somaliland which accounted for 815,780 skins. At the present time trade in skins is steady, and although prices have somewhat decreased, they are still higher than they were in the boom year 1919. Purchases are being made whenever skins are available, and it seems that the return to normal prices is not yet in sight.

Cigarette-making is a busy industry in the Teheran district, and hand-operated cigarette-rolling machines should find a market. Upwards of 300,000 cigarettes are rolled by hand daily in Teheran, at an excessive cost in time and labour. The machinery offered should be simple in operation, durable, and reliable, it being practically impossible to repair locally even the simplest kinds of equipment. In the past attempts have failed because the machines offered were too complicated for Teheran workmen to handle.

Coal, Iron and Steel.

Statistics of Production for Europe and the United States.

We are indebted to the *European Commercial* for the following statistical data, compiled by the National Federation of Iron and Steel Manufacturers, London, giving a survey of the production of iron, steel and coal in the United States and various European countries for the month of February, preceded by a general summary of the situation.

United Kingdom.

Pig Iron.—In spite of the increased demand for pig iron, the uncertainty as to coke supplies in February was such that only nine furnaces were blown in during the month, so that, since three had to be damped down, the number in blast at the end of Frbruary, 189, was only six more than at the end of January. The production of pig iron amounted to 543,400 tons—slightly less than in January—but this is more than accounted for by the shorter month, for the daily rate of production was about 6% in excess of that of January. The production included 174,000 tons of hematite, 184,800 tons basic and 156,200 tons forge and foundry pig iron.

Steel.—The production of steel ingots and castings in February amounted to 707,100 tons; this is the highest monthly output attained since December 1920 (when the production amounted to 746,600 tons) and is higher than the average monthly rate in 1913. All districts, with the exception of the West Midlands and the West Coast, showed an increase over January, but the largest increase occurred in Scotland (53,300 tons to 116,800 tons), where the output was low owing to the New Year holidays.

Imports and Exports.—Imports of iron ore were less in February than in January but the decrease can be accounted for by the shorter month. Imports of iron and steel and manufactures thereof amounted to 122,700 tons. 36,800 tons of which were billets, blooms and slabs, and 15,700 tons pig iron. Exports of iron and steel amounted to 317,600 tons, compared with 353,400 tons in January. Exports of pig iron and ferro-alloys amounted to 80,000 tons, of which about one-half were sent to the United States, 6,300 tons to Belgium, 5,580 tons to Germany, 3,864 tons to Denmark, 2,520 tons to France and 2,235 tons to Italy; exports of galvanized sheets amounted to 49,500 tons, of which 10,800 tons went to Argentine, 12,500 tons to India and Ceylon, and 10,000 tons to Australia. Exports of tinplates amounted to 46,700 tons, of which 3,800 tons went to Argentine, 3,500 tons to Australia, 3,400 tons to France, 2,800 tons to the Netherlands, 2,900 tons to Norway, 5,400 tons to India and Ceylon and 2,400 tons to Canada. The exports of rails included 8,700 tons to India and Ceylon and 5,600 tons to Australia.

Coke.—Exports of metallurgical coke declined from 181,000 tons in January to 147,000 tons in February, and it is understood that exports in the later weeks of the month were lower than in the earlier. It is unlikely that the Continent can continue for long to purchase British coke at its present high price and if exports decline and more ovens are brought into operation the situation should soon become appreciably easier. In any case the situation is one for adjustment between the two industries concerned and not one that calls for Government intervention in any way. The following table compares exports of coke to the principal countries of destination in each of the last three months, with the monthly average in 1920:—

Country of Destination	Monthly Average 1920	December 1922	January 1923	February 1923
		Tons		
Sweden ..	10,101	41,351	48,081	26,273
Denmark ..	5,073	13,428	14,309	7,269
Netherlands ..	668	9,818	6,136	5,559
Germany ..	—	13,499	3,379	13,380
Belgium ..	247	20,904	7,912	8,388
France ..	47,381	17,615	45,348	48,787
United States ..	—	3,407	16,757	4,237

France.

The latest figures of production relate to January and, while these show a decline as compared with December, they do not reflect the serious position which has since developed in the French iron and steel industry. Stocks of materials and fuel are in many cases near to exhaustion and it is stated that the total amount of coke at the disposal of the S. C. O. F. in March was only about 150,000 tons. With English coke at 80/- to 88/- delivered at French ports, negotiations were entered into for the purchase of American coke at 16 dollars or 17 dollars (68/- to 72/- per ton). Arrangements were made for an exchange of scrap for coke from Belgium, one ton of scrap from France to be exchanged for 2 tons of coke from Belgium, the monthly maxima to be 15,000 and 30,000 tons respectively. In the Est

only 24 furnaces out of 60 were blowing on March 1st, and in Meurthe-et-Moselle 45 out of 88.

BELGIUM AND LUXEMBURG.

The Belgian figures of production for February are not yet available but they will doubtless show a considerable drop compared with January, although not to the same extent as France, since Belgium is more self-contained as regards fuel. A 5% increase in wages was granted to the miners in the Borinage and Charleroi regions as from March 18th and the men resumed work. As a consequence a 5% increase is paid to iron and steel workers since April 1st. A similar increase was also granted on March 1st, so that 10% has been granted altogether, which restores the reduction which was made last year. It is estimated that coke producing plants in Belgium are at present being operated at only 50% capacity, which is quite inadequate for requirements. The price of domestic coke is expected to rise shortly by 35 or 40 frs. per ton to about 200 frs. The present situation for iron and steel products remains disorganized and quotations nominal.

GERMANY.

The Ruhr situation has become a complete deadlock, and any resumption of Reparations fuel deliveries or of iron and steel goods is quite indeterminate; since France has hindered the import of raw materials other than from French territory, the Ruhr works are increasingly short of iron ore and limestone and it is insignificant that three blast furnaces at Krupps' works at Rheinhausen have had to suspend operations owing to the shortage of ore. Unoccupied Germany is reported to be very active in iron and steel on account of orders transferred from the Ruhr, but obviously only a limited tonnage can be undertaken by works outside the occupied area. The general level of prices with an appreciating mark tends to be above the prevailing world level and producers are concentrating on the home market. Four new open hearth furnaces of 80 tons' capacity each have recently been completed by Krupps and this fact is typical of the general reconstruction being effected in German industry.

UNITED STATES.

Business activity and production in the United States is increasing in spite of labour and railway car shortages. The pig iron production in February amounted to 2,994,000 tons, which was the highest output for any February on record. The daily output averaged 107,000 tons compared with 104,000 tons in the previous month and 109,000 tons in March 1920, which is the post-war maximum. Production of steel ingots and castings in February amounted to 3,336,000 tons compared with 3,716,200 tons in January. Unfilled orders on the books of the United States Steel Corporation at February 28th stood at 7,284,000 tons, an increase of 373,000 tons on the month, and the heaviest total since January 1921. All other available figures, such as railway statistics, automobile output, and building permits, indicate great business activity.

COAL PRODUCTION.

Production of coal in the United Kingdom, United States, France, Belgium and Germany, in thousands of tons of 2,240 lbs.

		United Kingdom	United States	France (including lignite) *c*	Belgium	Germany *d*	
						Coal	Lignite
1912	av. monthly	21,701	39,767	3,375	1,884	14,345	6,638
1913	,,	23,951	42,426	3,744	1,881	15,710	7,155
1919	,,	19,148	40,514	1,793	1,522	8,833	7,695
1920	,,	19,128	48,062	2,927	1,838	10,780	9,157
1921	,,	13,653	37,609	3,163	1,789	11,175	10,080
1922	,,	20,987	34,191	3,538	1,744	10,701	11,249
1922	February	19,763*a*	43,325	3,337	1,732	11,277	9,933
	March	24,746*b*	53,581	3,748	1,937	13,208	12,068
	April	18,049*a*	14,111 *e*	3,227	1,699	11,024	10,468
	May	19,145*a*	18,153 *e*	3,388	1,681	11,943	11,258
	June	20,357*b*	20,005 *e*	3,362	1,648	8,897	10,323
	July	18,604*a*	15,300 *e*	3,458	1,643	9,439	11,232
	August	19,051*a*	23,240 *e*	3,404	1,668	10,046	11,957
	September	25,680*b*	41,056	3,647	1,724	9,998	11,639
	October	21,208*a*	47,974	3,775	1,790	10,581	11,885
	November	27,285*b*	47,889	3,694	1,777	10,293	11,710
	December	20,268*a*	48,989	3,739	1,790	9,532	11,712
1923	January	21,219*a*	52,042*a*	4,134	1,963	1,105 *f*	8,962
	February	22,247*a*	—	—	—	—	—

a—*Four weeks.*
b—*Five weeks.*
c—*Including output of Lorraine in* 1919, *and also of the Saar in* 1920 *and* 1921.
d—*Excluding output of Lorraine and Saar in* 1919, *and thereafter.*
e—*Strike period.*
f—*Production of Dortmund and Bonn districts is not included.*

Production of iron and steel in the United Kingdom, United States, Canada, France, Belgium, Germany, and Luxemburg. All figures are given in thousands of tons of 2,240 lbs.

Pig Iron.

	United Kingdom	United States	Canada	France	Belgium	Germany	Luxemburg
1912 av. monthly ..	729.0	2,477.0	76.1	405.0	192.0	1,279.2	184.8
1913 ,, ..	855.0	2,581.0	84.6	427.0	203.8	1,373.0	209.0
1920 ,, ..	669.5	3,077.6	83.2	281.7	92.7	464.0	58.0
1921 ,, ..	217.6	1,390.8	51.4	280.3	71.8	508 0	79.6
1922 ,, ..	408.3	2,239.0	33.6	387.5	131.5	—	137.5
1922—February ..	300.1	1,630.0	34.8	318.0	90.3	—	95.2
March ..	389.8	2,034.8	42.8	379.8	116.5	—	130.9
April ..	394.3	2,072.1	33.3	377.3	112.0	—	128.8
May ..	407.9	2,306.7	26.8	435.3	117.1	—	139.3
June ..	369.2	2,361.0	31 4	409.3	113.1	—	141.5
July ..	399.1	2,400.0	33.5	421.4	125.2	—	147.8
August ..	411.7	1,816.2	29.0	440.4	151.5	—	147.0
September ..	430.3	2,033.7	26.8	454.6	160.6	—	149.4
October ..	481.5	2,637.8	38.7	495.6	172.0	—	162.6
November ..	493.9	2,849.7	35.8	505.5	169.6	—	151.3
December ..	533.7	3,086.9	38.1	506.2	157 9	—	156.7
1923—January ..	567.9	3,229.6	—	478.6	157.8	—	139.5
February ..	543.4	2,994.0	—	—	—	—	86.5

Steel.

	United Kingdom	United States	Canada	France	Belgium	Germany	Luxemburg
1912 av. monthly ..	566.0	2,604.0	71.0	363.0	206.0	1,339.6	79.4
1913 ,, ..	639.0	2,608.0	87.0	385.0	202.3	1.445.0	109.0
1920 ,, ..	755.6	3,511.0	92.0	250.2	101.3	552.0	49.0
1921 ,, ..	302.1	1,645.3	55.6	254.5	65.0	725.0	62.3
1922 ,, ..	486.0	2,794.4	40.5	366.8	128.2	—	114.0
1922—February ..	418.8	2,072.5	42.4	311.8	82.7	—	75.1
March ..	549.4	2,815.6	29.9	361.2	104.0	—	99.2
April ..	404.2	2,794.4	21.9	319.3	95.2	—	98.1
May ..	462.3	3,099.1	17.0	358.1	116.5	—	112.2
June ..	400.2	3,010.8	32.6	352.5	111.3	—	121.6
July ..	473.1	2,842.4	62.8	362.9	112.5	—	125.6
August ..	528.4	2,530.9	59.2	390.3	149.1	—	129.2
September ..	555.9	2,712.9	35.8	400.3	168.0	—	132.6
October ..	565.2	3,282.8	52.7	423.1	179.6	—	136.8
November ..	600.8	3,302.1	51.4	404.1	174.6	—	130.2
December ..	546.1	3,177.0	46.7	408.1	166.7	—	131.6
1923—January ..	634.1	3,716.2	—	401.4	159.8	—	121.5
February ..	707.1	3,336.0	—	—	—	—	72 4

Imports and Exports of iron and steel in the United Kingdom, United States, France, Belgium, Germany and India. All figures are given in thousands of tons of 2,240 lbs.

Imports.

	United Kingdom	United States	France	Belgium	Germany	India
1912 av. monthly ..	166.4	15.3	16.4	87.0	27.3*a*	66.4
1913 ,, ..	185.9	20.4	12.9	68.9	25.0*a*	76.8
1920 ,, ..	92.4	22.5	89.0	67.0	26.2	39.5
1921 ,, ..	137.1	7.0	38.5	43·3	?	65.1
1922 ,, ..	73.5	?	64.3	?	?	79.0
1922—February ..	64.6	9.3	55.8	139.0	66.9	86.4
March ..	63.8	11.3	68.3	(1st Qr.)	105.7	93.2
April ..	59.9	13.7	99.1	32.0	129.0	92.9
May ..	60.9	15.8	41.1	62.4*b*	154·3	108·7
June ..	52.8	29.2	73.2		137·7	86.1
July ..	55.9	34.0	54.8	129.7*b*	182.9	73.4
August ..	80.1	41.0	40.3	(3rd Qr.)	181.8	57.2
September ..	70.6	64.2	50.0		175·0	41·3
October ..	90.6	*c*	109.2	140.0*b*	233·8	75.9
November ..	79.8	*c*	58.5	(4th Qr.)	186.7	71·7
December ..	114.0	*c*	109.5		?	—
1923—January ..	128.9	—	55.8	—	—	83.0
February ..	122.7	—	—	—	—	—

Exports.

	United Kingdom	United States	France	Belgium	Germany	India
1912 av. monthly ..	400.6	201.5	41.5	124.5	482.4*a*	1.0
1913 ,, ..	414.1	241.0	48.2	128.8	516.9*a*	8.7
1920 ,, ..	270.9	392.2	74.6	74.3	143.6	3.5
1921 ,, ..	141.7	181.0	132.7	75.9	?	4.1
1922 ,, ..	283.4	182.3	164.0	?	?	8.3
1922—February ..	223.4	133.2	107.0	198.4	170.0	7.5
March ..	295.8	204·8	72.3	(1st Qr.)	208.7	7.8
April ..	258.4	190·1	125.8	83.9	195.5	5.0
May ..	272.4	218.5	122.2	279.6*b*	204.5	6.0
June ..	236.3	211.4	179.5		209.1	6.0
July ..	251.7	155.4	182.1	522.6*b*	206.2	15.4
August ..	270.0	132.9	168.4	(3rd Qr.)	181.3	10.4
September ..	279.2	128.3	173.8		223.5	8.2
October ..	347.1	129.6	235.6	681.2*b*	229.9	9.8
November ..	372.3	126.9	179.5	(4th Qr.)	210.5	5·4
December ..	340.8	148.7	221.7		258.9	12.7
1923—January ..	353·4	—	158.5	—	—	13.6
February ..	317.6	—	—	—	—	—

a—Including Luxemburg. b—Belgium and Luxemburg trade combined, consequent on the economic union between these two countries
c—Imports under the new tariff not yet compiled.

Views and Comments.

BY "ECONOMICUS".

In a speech he delivered at Caxton Hall, London, Dr. Gilbert Slater is reported to have said that "India has witnessed a remarkable rate of industrial progress under the free trade regime of the past" and that during the decade 1904–14 there was an increase of 60 to 100 per cent in certain industries such as cotton mills, jute mills, factories, coal output, earnings of railways, imports and exports, yield of income tax and deposits in banks. Such a comparison of figures between two dates is unsatisfactory for it involves what is called the error of percentages; from 1 to 2 the increase is 100 per cent, but the percentage of increase from 100 to 101 is only 1. In a vast country like India, with its vast potentialities of production and consumption, an increase of cotton mills from 206 to 239 or jute mills from 38 to 64 in the decade 1904–14 does not amount to much. Perhaps also the cotton and jute mills are those which require least protection. In any case there is the obvious retort that fiscal protection, judiciously applied, would have led to a far greater increase in the number and variety of industries. We hold, however, with the Fiscal and Industrial Commissioners that "the industrial development of India has not been commensurate with the size of the country, its population and its natural resources."

* * *

In the course of his Presidential Address at the Annual Meeting of the Indian Merchants Bureau in February, Sir Fazulbhoy spoke in part as follows:—"We are now suffering principally from the tradition of interference from London which at present gives rise to delays, difficulties and suspicions..... The present condition of the currency was forced down upon this country against unanimous Indian opinion solely in the interest of the English money market. What they wanted was natural conditions for the inflow, not only of gold bullion but of gold sovereign also into the country." Sir Fazulbhoy repeated the same charge in the presence of Sir Basil Blackett at the meeting of the Bureau held on April 4th. Sir Basil, of course, repudiated the charge, but the fact remains that the scandalous sale of Reverse Councils was against Indian interests and that the present gold or sterling exchange standard is more suited to our foreign trade in which the European interests are predominant than the needs of internal circulation. It is time that our rulers identified themselves completely with the interests of India.

* * *

Mr. Statham, Principal, Anantapur College, spoke as follows on the "Future of Education in India":—"The conditions which prevail in other countries whereby the youths of the country at various stages of education are absorbed into all the varied channels of occupation in the life of a nation should be created here. Railways must take apprentices, not in ones or twos, but in hundreds. Posts and telegraphs must be a more fruitful source of demand for boys from Indian schools. Under the new policy cadets for the Indian army must soon be required in increasing numbers. An Indian mercantile marine must give scope for Indians to be trained as merchants, seamen and marine engineers. Business houses must be more and more prepared not merely to employ Indians as clerks but to make a more progressive use of Indian youths who are prepared to go through the mill of apprenticeship. Indigenous industry must make an ever-increasing call on the young men of the country and engineering shops of all kinds should, as elsewhere, be diverting boys from higher education into practical professions." The main economic problem in India is the problem of unemployment, and we enclose every word of Mr. Statham's observations.

The steady annual decline in Australian gold production which has proceeded since 1903 has been arrested. The gold return of theCommonwealth for 1922 was 758,303 fine oz., compared with 757,431 fine oz. in 1921. Western Australia, as usual, heads the list, and has a total for 1922 of 538,245 fine oz., or 15,482 fine oz. less than 1921. Victoria again comes second, with 109,273 fine oz., an increase of 4,761 fine oz., while Queensland, with 79,332 fine oz., has a large increase of 38,936 fine oz., accounted for by resumption of operations at the Mount Morgan mine. In New South Wales the yield has dropped from 51,173 fine oz. to 25,222 fine oz.

Economics in the West.

Agricultural Credit.

London, April 30th 1923.—The dispute regarding the terms of employment in agriculture in certain parts of the country has served to attract a great deal of attention to the difficult situation in which farming is placed at the present time. That profits have been very drastically cut down in the last two years by the fall in prices is apparent from available statistics. The Board of Trade computation places the level of cereal prices for February 1923 at only 38 per cent above that of 1913, while the index number of all other commodities was 60 per cent higher than in the last pre-war year. At the same time the farmers' expenses are relatively higher than in pre-war days. Local rates impose a particularly heavy burden, the increase since the passing of the Agricultural Rates Act of 1896 being in some cases 900 per cent, while costs of transport remain disproportionately high, standing now at a level roughly 75 per cent above 1914.

But, added to these circumstances, many farmers are suffering from a too hasty reliance on the quasi-promises of Coalition Ministers to assure to agriculture a higher price for its products than it is now receiving. In order to increase the home production of cereals the Corn Production Act of 1917 guaranteed to farmers a certain minimum price for their crops, and this policy was made permanent by the Act of 1920 so far as wheat and oats were concerned. The guarantees, however, were repealed in 1921 owing to the Government's difficult financial position, a sum of 15 millions being set aside out of the Exchequer to compensate the farmers for their immediate losses. In 1922 the farming community was given some concession in the matter of taxation, the basis of income tax assessment under Schedule B being reduced from twice the annual value of their holdings to the single annual value.

But such concessions could not undo the major result of the Government's representations as to the continuance of the guarantees. The effect was that many farmers were attracted by the prosperity of the industry under Government protection, if not, to purchase their holdings, at least to offer much higher prices than they would otherwise have considered. The rapid increase in owner-occupancy, which began in 1911 and gained momentum under the pressure of heavy taxation during the war, was accelerated and land values rose considerably, in some cases over 50 per cent. These purchases involved the farmers in many cases in commitments which, now that farming is in such difficult financial straits, are most burdensome, if not impossible, to discharge. The Committee on Agricultural Credit, which has just issued its Report, accordingly lays a definite responsibility upon the Government to do something to relieve the farmers' burdens.

Long-Term Credit.

The substance of the Report and the Committee's recommendations raise the whole question of the place of credit in rural economy. For such discussion three distinct classes of agricultural credit should be distinguished. The first is long-term credit for land purchase and permanent improvement. For the latter purpose the Lands Improvement Company makes loans on mortgage at a gross rate of about 6 per cent per annum, the loans being repayable in from 15 to 40 years. The Company is subject in certain respects to the supervision of the Ministry of Agriculture, and since, according to the Committee, the mortgages acquired by it are readily assignable to insurance companies, there is no reason for supposing that any vital improvement of the present facilities is called for. In the matter of land purchase, however, the situation is very different. The financing of the extraordinary purchases between 1917 and 1920 was undertaken largely through the banks by means of overdrafts. The banks, says the Committee, lent anything up to the full price of the farms, though usually allowing a margin of 25 per cent. The rate of interest at the outset was from 6 to 6½ per cent but has since been reduced by roughly 1 per cent. Altogether evidence was found that nearly one-half of the total purchase money borrowed was obtained from the banks, the aggregate now outstanding, in the case of the five leading banks, being about 26 millions. In other cases funds for land purchase were obtained from relatives and friends at comparatively low rates; from solicitors, who loaned trustee-funds usually on mortgage; from the vendors of the land; and in Scotland from insurance companies.

INTERMEDIATE AND SHORT-TERM CREDIT.

The second class of credit in order of length may be termed intermediate. This type is required for purposes which take longer in their accomplishment than the ordinary seasonal farming processes, and which run up to about 5 years before the turn-over is complete. The purposes, so described, include the purchase of permanent live-stock, and of machinery and implements, and the execution of tenants' improvements, such as minor drainage works and fencing.

In the matter of existing facilities there is little to distinguish the second from the third class of credit, namely, short-term. It is in the vital quality of length of life, however, that the distinction is important. To meet the ordinary requirements of producing and marketing agricultural goods, from the purchase of seed and manure to the receipt of payment for the crop, credit should rarely be granted for more than one year. For supplying both these classes of credit, the banks are very largely responsible, lending more commonly on overdraft. In addition live-stock auctioneers, seedsmen, manure merchants and other traders frequently give credit to their farmer clients.

EXISTING FACILITIES.

The Committee, in the course of its investigations, makes clear the defects in the existing machinery. The facilities for land purchase were found to be inadequate. It is perfectly true that from the borrower's point of view, the bank overdraft possesses the advantages of elasticity, secrecy, economy in initial expenses as compared with a mortgage, and convenience in repayment as the borrower's ability permits. On the other hand, while the banks were dealing with the situation "with patience and forbearance," the overdraft has the disadvantage of being callable at short notice, while the charges are liable to vary according to changing monetary conditions. Seeing, therefore, that the banks, who are under an obligation to their depositors to keep their assets in as liquid a form as possible, cannot supply the full needs of tenants desiring to purchase their holdings, and the other sources of supply fail to make up the deficiency, some additional machinery was considered necessary.

Intermediate credit possesses the same non-liquidity as long-term credit though in less degree. In the words of the Committee, "the investment of money in non-convertible securities in this way is hardly consonant with the canons of banking." Consequently some new machinery was found to be wanting in connection with this type of credit. But more varied defects were discovered in the machinery for supplying short-term credit. The Committee discovered little ground for the complaints that the supersession of the old country banks by joint stock branches led to undue rigidity in dealing with applications for loans, the banks' policy being to restrict the movements of branch managers to a comparatively small area. None the less there were certain deficiencies in the existing facilities.

DEFECTS IN EXISTING MACHINERY.

The first was apparent to the Committee in the case of the now small class of farmers who had no banking accounts, and the larger number of those who, through the distance of their holdings from the nearest bank, were unable to come into close contact with the manager. One of the chief difficulties with which the banks are faced is the reluctance of large numbers of farmers to keep proper accounts, thus depriving the banks, and the farmers themselves, of information of the greatest value in estimating credit risks. The second gap was discovered in the case of purchases of seasonal live-stock. This type of farm product, owing to the ease with which it can be moved and to the difficulty of identification, is not regarded by some banks as a good banking security, and farmers are consequently forced in certain cases to accept the credit terms of dealers and auctioneers. The supplying of credit by auctioneers, dealers, seedsmen, etc., possesses disadvantages which the Committee noted carefully.

PROPOSED MORTGAGE SOCIETIES.

In order to make good the deficiencies and to replace unsatisfactory credit machinery the Committee made concrete proposals for the setting up of two distinct classes of institution. The first class consists of organizations, similar in many ways to the American Federal Farm Loan Banks, to supply long-term credit to those farmers who contracted to purchase their holdings during the term of the Corn Production Acts. These Mortgage Societies should issue debentures, guaranteed as to interest and principal by the State, redeemable within forty years, and bearing interest at a maximum rate of 5 per cent. The funds so raised would be loaned on mortgage up to 75 per cent of the present value of the land, the loans to be repayable within the lifetime of the debentures. The interest charge for

these loans would be not more than one-half of one per cent above the debenture rate. Of the margin between the interest paid by the mortgagors and the cost of the money to the Society, one-quarter per cent would go to the State to build up a reserve fund against possible losses under the guarantee, the remaining quarter being retained to cover expenses.

Scheme in Practice.

The scheme in its present form is faced with certain important problems. The first question which suggests itself is that of the 75 per cent advance. The Committee states that the banks at the outset lent anything up to the full price of the farms, though usually a margin of 25 per cent was enforced. Owing to the decline in land values, however, it is quite possible that the margin has disappeared in many cases, so that the Mortgage Society loan would frequently fall short of the sum required to pay off existing bank overdrafts. As a fact, therefore, the scheme fails to provide the hard-pressed farmer with a margin of working capital, while the farmer who has not already pledged his land as security can readily obtain from the banks all the credit he needs. In this connection, also, the Committee affirms its belief that the figure of 75 per cent of present value affords ample security to the lending institution on the theory that "capital values are based on the long view and are greatly affected by ephemeral conditions." Nevertheless, it produces statistics showing that land prices rose during the boom to anything up to, and even slightly beyond, 50 per cent above their pre-war levels, while they subsequently fell on the average by 20 per cent. In view of the present condition of agriculture, a further fall in farm values cannot be regarded as entirely out of the question.

The scheme has already been criticised on the point of interest charges. At a rate of 5½ per cent, with amortisation payments added, the annual payment for forty years in respect of a loan for £100 would be £6 8*s.* 3*d.* The farmers contend that this rate is too high and that equally favourable or even more satisfactory terms can be obtained from the banks. The Committee itself found the present charge on overdraft to farmers to be 5–5½ per cent. However, its faith in the scheme is based upon the belief that farmers will be attracted by the regular payments and fixed rates, as opposed to the possibility that with a marked revival of trade the rates on overdrafts might be increased and demands made for their reduction or repayment.

Co-operative Credit Societies.

The second class of institution is intended to augment the present sources of intermediate and short-term credit. It consists of Co-operative Credit Societies formed by agriculturists and others interested in the prosperity of the industry, in accordance with rules prescribed by Government Departments. These societies would be small, their geographical unit being the rural district. The Government assistance would take the form of a loan of £1 for every £1 of share capital raised by the society upon which not less than 5 shillings had been paid up. On these advances the "lowest economic rate possible" would be paid. The Government's advance would rank for all purposes prior to the subscribed capital, and the societies would be affiliated to special branches of the Departments of Agriculture, which would exercise general supervision over their operations. Should the societies desire further to augment their funds they would be permitted to take deposits from members or non-members, in other words, to act as co-operative banks. The Committee would lay no restriction on the societies in respect of the purposes for which their funds might be used. They would be free to "give credit for any agricultural object which, in their judgment, represents a justifiable investment of the societies' funds."

Prospects of the Scheme.

The Government assistance proposed under the scheme is in effect merely an inducement offered to the farmer to co-operate. The Prime Minister admitted in the House of Commons last month that co-operation among farmers in this country was "difficult to bring about," so that the adoption of the scheme will furnish a useful experiment as to the strength of the farmer's objections to mutual assistance. The chief of these is that the average farmer is unwilling to take the risk that his credit requirements shall become known to his neighbours; and the scheme suggests no ready way of overcoming this prejudice.

But a small local co-operative society has the same special characteristics in trade risks as the country bank. Its fortunes are bound up with the locality in which it operates, and in highly specialised productive areas a failure of the chief crop might involve the society in heavy losses, or even in financial disaster. Modern British banking has overcome the difficulty by the branch system, under which risks are spread over all kinds

of production and trade. By analogy, some scheme of federation between the societies for the mutual sharing of risks would appear to be advisable.

The probable effects of these schemes on productive efficiency raise several conjectural questions, but the matter of the reversion of arable land to permanent grass stands uppermost.

Some impression of the effects of the guaranteed prices and their subsequent repeal upon production may be gained from the following statistics :—

Area of Arable Land and Permanent Grass and Estimated Total Production of Certain Crops, in England and Wales, 1913, 1919 *and* 1922 :—

(000 omitted)

Area	1913	1919	1922
	acres	acres	acres
Arable Land ..	11,058	12,309	11,311
Permanent Grass ..	16,071	14,439	14,715
Estimated Total Production	Qtrs.	Qtrs.	Qtrs.
Wheat	6,642	7,976	7,664
Barley	6,323	5,474	5,068
Oats	9,379	11,417	9,289
	Tons	Tons	Tons
Potatoes	2,895	2,733	4,012
Turnips and Swedes	12,794	11,159	10,908
Mangolds	7,611	6,294	8,560

A further table relates the above to the requirements of the country in the matter of certain foods :—

Total Estimated Consumption in Great Britain and Proportion of Home-Grown and Imported Produce Consumed, 1922 :—

Commodity	Estimated Total consumption	Proportions Home grown Produce	Imported Produce *
1922	Tons	%	%
Wheat† ..	4,790,000	27	73
Barley ..	1,699,000	63	37
Oats ..	2,491,000	82	18
June 1921 to May 1922			
Beef and Veal	1,137,000	43	57
Mutton & Lamb	545,000	37	63
Pig-meat	683,000	42	58

* Including imports from Ireland.

† Including wheat meal and flour (expressed as grain).

Apart from the Government's responsibility for the extraordinary Corn Production Act purchases, it would seem equally important in the interest of national production to provide facilities for other farmers to purchase their holdings. The Committee does not go into this matter at any length, and confines itself to expressing the hope that the Mortgage Societies will at some future time be able to issue debentures without State guarantee in order to extend their operations to these other purchasers. The failure to deal with this problem leaves a serious gap in the proposals for the reorganization of our agricultural credit system.

NEED FOR ECONOMY IN PRODUCTION.

The proposals for the formation of Co-operative Credit Societies are welcome in the interest of production. If, by departmental propaganda and persuasion, the farmers are induced to combine for credit purposes, they will be most likely to extend the field of their co-operation to the purchasing of supplies and the preparation, transport, and marketing of their products. There is no doubt that by these means the industry can be placed on a much more efficient basis, and that, by the resultant cutting of costs, profits can be increased.

This, indeed, is the chief value of the Committee's recommendations, for, as is pointed out in the Report, credit alone cannot make the industry prosperous—a remark as pertinent to the American as to the English farmer at the present time. Judging from the speeches of Ministers, the Government have set their face against the granting of subsidies or protection, but it remains to be seen how far their attitude will be modified by the recommendations of the expert committee of economists, which are understood to include the imposition of import duties on flour, barley for malting, and hops. Nevertheless, it is urgently necessary to examine very minutely the question of the farmers' costs and to economise wherever possible. Apart from questions which can only be answered as and when the farmers generally adopt intelligible systems of accounts, several matters call for investigation. The Government have, in the first place, promised an inquiry into agricultural rating, and the introduction of legislation to remove unfairness. Representations are being made to the railways to reduce freight rates on agricultural products and in this direction co-operation should be particularly useful in taking advantage of the lower rates on large shipments. Another useful line of investigation recognized by the Minister of Agriculture is in respect of the great disparity between the cost of vegetable food to the consumer and the price received by the farmer for his products.

The Government have promised to devote part of the sitting on April 11 to a discussion on the conditions of the industry, and are preparing a bill embodying the principles of the Agricultural Credit Committee's Report. Should protection and subsidies be definitively ruled out, it is along the lines of co-operation

that most is to be hoped for in placing the industry on a more prosperous basis. Only under such conditions can be set in motion a natural flow of capital into agriculture sufficient to overcome that persistent under-capitalization from which it has long been suffering.

National Finance—1922–23.

The total revenue for the financial year ended March 31 amounted to 914 millions or 3¼ millions more than the Budget estimate. In the case of excess profits duty the heavy repayments resulted in net receipts of only 2 millions against an estimate of 27¾ millions, while special miscellaneous revenue brought in only 51 millions as compared with 90 millions estimated. Revenue did not quite come up to Budget expectations in certain other instances, but, owing to heavy payments on account of arrears, income tax and super tax yielded an excess of 50 millions, while customs, motor vehicle duties, estate, etc., duties, and stamps all brought in more than had been anticipated. In the following statement are shown the detailed receipts for the years 1913–14, 1921–22 and 1922–23 and the Budget estimates for the past year :—

Revenue (000 omitted)

	1913—14 Actual	1921—22 Actual	1922—23 Budget Estimate	1922—23 Actual
	£	£	£	£
Customs ...	35,450	130,052	112,250	123,043
Excise ...	39,590	194,291	160,750	157,275
Motor Vehicle Duties	—	11,096	10,600	12,321
Estate, etc., Duties ...	27,359	52,191	48,000	56,871
Stamps ...	9,966	19,638	18,250	22,222
Land Tax & House Duty	2,700	2,590	3,000	2,980
Income-tax & Super-tax	47,964	398,887	329,000	379,045
Excess Profits Duty	—	30,452	27,800	2,004
Corporation Profits Tax	—	17,516	19,750	18,977
Receipts from Taxes	163,029	856,713	729,400	774,738
Postal Service	21,190	40,000	35,667	34,150
Telegraph ,,	3,080	5,900	5,230	5,500
Telephone ,,	6,530	10,500	13,728	1,3550
Crown Lands	530	820	750	900
Rcpts. from Sundry Loans	1,580	13,807	14,000	10,016
Miscellaneous—				
Ord. Rcpts.	2,304	26,334	22,000	24,140
Spl. ,,	—	170,806	90,000	51,018
Non-tax Rev.	35,214	268,167	181,375	139,274
Total Rev.	198,243	1,124,880	910,775	914,102

RECEIPTS		£
Revenue		914,012,000
Money raised by Creation of Debt—		
Treasury Bonds—		
5-15 Year, 1925—35 5½% ... ... 5% 1927 ...	61,708,000	
4½%, 1932 ...	95,010,000	
4%, 1931—33 ...	2,070,000	
National Savings Certificates ...	60,808,000	
Ways and Means Advances by Public Depts. (net)	46,596,000	
		266,192,000
Repayments, etc.—		
Under Land Settlement (Facilities) Acts, 1919 and 1921		292,000
From National Savings Certificates Investment Account		6,828,000
Interest on National Savings Certificates in National Savings Certificates Investment Account ...		162,000
Suez Canal Drawn Shares... ...		6,000
Bullion Advances		800,000
Taken from Exchequer Balance ...		4,355,000
		£1,192,647,000

PAYMENTS		£
Expenditure		812,496,000
Issues for Purchase or Redemption of Deadweight Debt—		
£		
27,150,000	National Savings Certificates (Principal repaid)	
19,612,000	5% Exchequer Bonds	
275,000	5¾% Do do	
44,684,000	5% National War Bonds repaid	
17,275,000	Other Debt repaid (net)	
266,013,000	Treasury Bills repaid (net)	
6,000	Suez Canal Drawn Shares issued to National Debt Commissioners	
£375,015,000	Met out of—	
	Revenue	101,516,000
	Proceeds of Try. Bonds	158,787,000
	Ways & Means Advances by Public Depts. ...	46,596,000
	Proceeds of National Savings Certificates...	55,808,000
	Repayments, etc., and Cash Balance ...	12,308,000
National Savings Certificates issued for Local Loans		5,000,000
Old Sinking Fund Issues		136,000
		£1,192,647,000

When the Budget was introduced it was expected that equilibrium would be established as between revenue and expenditure only by suspending the new sinking fund and by borrowing the amounts needed for other sinking fund purposes. The final accounts for the year, however, showed a surplus of 101½ millions. Actual expenditure, including a large sum for sinking fund and contractual obligations, amounted to 812 millions as compared with an estimate of 932 millions for consolidated fund and supply services, supplementary estimates and contractual and sinking fund obligations. The principal savings have been effected in the Supply services which are below estimate to the extent of 81½ millions, of which 27½ millions is on account of the fighting forces, 49 millions for the Civil Services, and 5 millions for the Revenue Departments and the Post Office.

The abridged statement given above shows the operations of the Treasury during the past year.

Expenditure (000 omitted)

	1913-14	1922-24		1923-14
	Actual	Total Estimates	Actual	Estimates excluding Supplementary estimates
	£	£	£	£
Debt Charge and Sinking Fund Obligations.	24,500	335,000 22,500†	323,990†	347,000*
Other Consolidated Fund Services.	12,823	28,438	29,506	30,000*
Consolidated Fund Services.	37,233	385,938	353,496	377,000*
Supply Services—				
Army ..	28,346	62,640	—	52,000
Navy ..	48,833	64,884	—	58,000
Air Force ..	—	10,895	—	12,011
	77,179	138,419	111,000	122,011
Civil Services.	53,578	255,630	—	226,962
Middle East.	—	11,176	—	8,669
Unclassified Services.	323	69,140	—	16,043
	54,901	335,946	286,826	251,674
Customs and Excise and Revenue Depts.	4,483	12,275	—	11,591
Postal Services.	24,607	53,822	—	50,874
	29,090	66,097	61,174	62,465
Total Supply Services.	160,170	540,462	459,000	436,150
Supplementary Estimates not required.	197,493 —	926,400 6,169	812,496 —	813,150* —
Total ..	197,495	932,569	812,496	813,150*

* Unofficial. † Includes debt cancelled through revenue payments in scrip, Victory and Conversion Loans Sinking Funds and 4 per cent and 5 per cent War Loan Depreciation Fund, for which no provision was made in the Budget. For the period from April 1, 1922 to March 24, 1923, these three items amounted to £21,753,000.

1923–24.

The estimates of the spending departments have now been presented and amount in the aggregate to 436 millions, of which 21 millions represent transitory expenditure arising out of the war. They show a saving of 110 millions on last year's estimates, including 25 millions for supplementary expenditure, and are about 23 millions less than the actual expenditure. The probable cost of the consolidated fund services and the amount to be provided for supplementary estimates will not be known until the Budget is introduced. But assuming the debt charge includes provision for all sinking fund obligations and the additional payment to the United States Treasury, about 377 millions will be required for the consolidated fund services. The probable expenditure for the year will thus amount to about 813 millions, without allowing for any supplementary estimates. If, on the other hand, the Chancellor of the Exchequer decides against debt redemption out of revenue, the estimate for the year, excluding supplementaries, will be about 780 millions.

The estimates for 1923–24 compare as follows with the estimated and actual figures for the past year and with the actual expenditure in 1913–14 :—

As already indicated, expenditure for the year, exclusive of supplementary estimates, will not be less than 780 millions on the most conservative basis, and it may be as much as 813 millions. Revenue, however, cannot be expected to bring in anything like the amount realized in 1922–23. Income tax, for example, will not be so productive for the full effect of the shilling reduction in the rate will now be felt, arrears have almost disappeared, and the assessments in the case of companies will include three bad years as

against two in 1922–23. Special miscellaneous receipts will also bring in much less than the 51 millions collected in the past year.

DEBT.

A year ago, the gross dead weight amounted to 7,654 millions. Beyond some 28 millions included in expenditure and applied to debt redemption about 109 millions has been paid off from the revenue surplus, repayments and the cash balance. But, against the total of over 130 millions thus retired, about 136 millions has been added to the debt through conversions and nearly 90 millions in respect of the capitalization of the accrued interest on the debt due to the United States. Unless, therefore, any cancellations have been made of which no notification has been given the amount of the debt on March 31, 1923, is approximately 7,750 millions.

Canadian Bank Act.

The amendment, proposed by the Minister of Finance, to the much-discussed "Section 88" of the Canadian Bank Act will hardly satisfy British and United States interests, which have criticized the provision enabling a bank to take priority over other creditors in respect of a manufacturer's materials or products. The requirement that all borrowers under this section give notice at the office of the Assistant Receiver-General will be similar to the legislation of some of the Provinces providing for compulsory registration of chattel mortgages. The commercial agencies and credit bureaux will no doubt have access to the register and will be able to record bank loans under Section 88. The information will thus be made available to selling interests which use the services of such organizations. The Government proposals, says a Montreal correspondent of the *Times*, in this connexion emphasize the importance of careful and thorough investigation before credit is granted.

The other proposed amendments to the Act are not of particular interest to British firms doing business in Canada. As a concession principally to public opinion following the Merchant's Bank disclosures, additional restrictions are to be imposed relative to loans to a bank's own officials, while further safeguards are to be provided in connexion with the bank's monthly returns to the Minister of Finance. Mr. Fielding again declared his belief that Government inspection would be of no practical value, but that it would entail embarrassment, trouble, and perhaps material loss to the Government. As an alternative, the system of shareholders' audit was instituted at the revision of the Act in 1913, and the present sytem is to be subject to more strict protective conditions.

Mr. Fielding has attempted to deal with the problem of private banks, by requiring that every person or institution receiving money on deposit must make a substantial deposit with the municipality in which such business is conducted and obtain a municipal licence. The Minister is counting upon "the local knowledge which is possessed by a municipality" to enable the authorities properly to review applications for licences. Incidentally it is another shrewd political move by the Dominion Government to escape responsibility in case any more so-called "private banks" meet an unhappy fate.

The Bank Act prohibits unauthorized use of the titles "banks," "banker," or "private banker," but various individuals and concerns have been taking deposits and in some cases exploiting foreign elements of the population. The recent collapse of the Dominion Ticket and Financial Corporation at Winnipeg has called attention to the need for some effective control of organizations of this kind, and it is questionable whether Mr. Fielding's proposals will provide the required measure of control. In Manitoba an agitation has developed for provincial regulation of deposit taking institutions other than those operating under Federal charter, and some plan of supervision, similar to that exercised over trust companies in Ontario, is being urged.

Some opposition is arising to the new Anti-Trust Bill now before the Dominion Parliament. After the Easter recess, and before the proposed legislation is given a second reading, organized representations will be made to the Ottawa authorities by certain manufacturing and trade interests advocating modification of certain provisions of the Bill.

Financial and Business Conditions in the U. S.

By Francis H. Sisson, Vice-President, Guaranty Trust Company of New York.

The strength and scope of the expansion of business activity in the United States have been accentuated by developments since the beginning of the year. The usual seasonal slackening in many lines has not appeared at all or has been less pronounced than would ordinarily be expected.

New records for the season in car loadings, the increasing congestion and rising prices in the iron and steel industries, unprecedented activity in the cotton manufacturing industry, intense and increasing activity in other industries—all attest a rate of production and distribution of commodities which surpasses most expectations.

It is apparent that, unless the rise in prices of raw materials is checked, further advances in prices of consumption goods may be expected. Resistance to rising costs of living, however, is a factor that cannot be ignored in estimating the probable further increase in prices.

Labour Shortage.

There are indications that a more powerful and immediate check than rising prices on business expansion in the United States may be a shortage of labour. This shortage of labour calls attention to restrictions upon immigration now in force and changes as proposed in the Immigration Bill recently reported to the House of Representatives.

The encouragement of proper assimilation of immigrants should be a primary aim of our legislation in this field. It is not evident, however, that the present or the proposed restrictions as a whole are capable of adequately serving this purpose. Rigid selection of the individuals and types is needed. But the literacy test does not sufficiently distinguish the assimilable individuals; nor do the percentage quotas by nationalities assure the best possible selection.

The emphasis which is placed upon the limitation of the numbers of immigrants, as a means of restricting the labour supply is the outgrowth of a wrong conception of the economic consequences of such a policy. A scarcity of labour which unduly forces up wages is not socially defensible merely because the nominal wages of a large part of the workers are made higher than they would be without the restrictions upon numbers. The extra costs are widely distributed and are borne in large part by the wage-earners themselves.

The Railroad Situation.

The increasing importance of the railroad problem is emphasised by the pronounced shortage of transportation facilities, which may arrest in the not distant future the present upspring of business activity in the United States. The vital dependence of the entire economic organization of the country upon railway transportation is daily becoming more obvious, and there cannot be continuing prosperity for the country as a whole without efficient service by the railroads.

Further emphasis is lent to the problem by the fact that there are pending before Congress one hundred and thirty-four bills relating to regulation of the railroads. Many of the proposed measures, which are designed to reduce railway net income by reducing rates, railway valuation, or the rate of return on railway value, have doubtless been inspired by the improvements effected in the railroad situation, despite serious handicaps, during the last several months, through the greater efficiency possible under private management and the gradual betterment of general business conditions. This is especially true as regards the steadily improved earnings of the railroads, due chiefly to the continued large volume of traffic which has kept the gross revenue large, and to economies in operation.

The proposals now being made to repeal the Transportation Act, and to establish new bases for rate making by fixing property valuations of the carriers at a third less than the sum tentatively fixed by the Commission, are founded upon a disregard of facts and a fundamental misconception of present needs. Any such drastic changes as a means of obtaining lower rates would certainly bring injury upon the public as well as the carriers. There has not been an opportunity to test fully the principal provisions of the Act of 1920. The fact that earnings have not equalled the fair return contemplated is not proof that such earnings are impossible under the present form of control.

The industrial progress of the country will be retarded materially if the attack upon the railroad rate structure succeeds. There is a wide field for investment of capital in such ways

as will reduce the operating expenses of a number of the roads. Electrification of some lines represents such an opportunitiy, but no significant progress will be made in this direction until generally higher earnings are firmly established.

EXCESSIVE REGULATION THREATENED.

Instead of multiplying and extending the features of public regulation, the railroads should be given an opportunity to perform their indispensable tasks with the least interference practicable on the part of the National and State Governments. The interests of the railway managers and owners are not opposed to the general well-being of the country, but in harmony with it. Over-regulation which ignores the diversity and complexity of the problems of management, and represses initiative and enterprise, does injury to the public which the railroads serve. The costs of excessive regulation may readily surpass those of too lax control. In the next few years hundreds of millions of dollars will have to be invested in the railroads, and most of these millions must come from the savings of the people, which can be attracted to such investment only on the basis of public confidence in the stability of railway earnings.

We should not forget, in this connection, that the railroads will have to bid for these millions in keen competition with many other borrowers. All the world urgently needs American capital, and as has wisely been observed, "investors need not, and will not, be mendicants for the privilege of serving the public." In other words, the credit of the railroads must be restored through adequate earning powers which will enable railway securities to take rank with the best in the American market.

New Process for Extracting Nitrate of Soda.

According to a report by the United States Consul at Iquique, official tests of the Janquera process for the extraction of nitrate of soda have just been held at the Oficina Galicia, near Iquique. They were witnesses by many men prominent in the nitrate industry, and the impression is general that the inventor has, in large part, made good his claims. Certain changes and improvements in the plant as installed are obviously necessary, but these are considered matters of detail, and there is a disposition to recognize that a new invention has been made which, when improved, may revolutionize the industry.

The inventor claims the following as the results that will be consequent upon the general adoption of his process :

1. An increase of ten or twenty fold in the nitrate riches of the Republic, as caliches with nitrate content as low as 10 per cent can be worked profitably.

2. Assurances to the Government for many years of the collection of export taxes at the present rate without hurting the industry.

3. Cheapening the cost of Chilean nitrates so much that the competition of artificial product will be postponed for many years.

4. Plant installations can be made with one-half the expenditure now necessary.

In the Janquera process the material is ground to pass through a $\frac{1}{4}$ inch mesh and is then highly heated. It is placed in a battery of eight gyratory drums, each 6 feet in diameter, and having its edge made of filter cloth. Water is forced into the centre of the first drum and is driven by centrifugal force through the material and out of the drum's edge, where it is caught and passed in rotation through all the drums. Leaving the eighth and last it is saturated with nitrate and is allowed to cool and deposit its nitrate contents in settling tanks.

In the test just concluded, working with material of 12 per cent content of nitrate, the extraction was said to be total and the consumption of oil fuel only $9\frac{1}{2}$ kilos per ton, but it should be noted that this test was made with fresh water and that the various weak solutions were not worked out as they would have to be in actual practice.

In export trade the seaboard town has many advantages over an inland centre. Cheap power, plentiful supply of good water, and ample transport facilities are amongst the principal attractions which count in the economic cost of production. On these points, Cardiff has claims which invite the careful consideration of all manufacturers. A booklet, entitled "Cardiff the City of Golden Opportunities for the Manufacturer." has been published by the Development Committee of the Cardiff City Council, and firms interested can obtain a copy of this useful publication (post free) on application to the Development Agent, City Hall, Cardiff.

Canadian Finance and Trade.

Montreal, April 1st, 1923.—As the economic development of Canada advances, and as the industrial and commercial systems of the country become more complex, new problems constantly present themselves and demand a solution. Among these problems one of no little importance is that of keeping industrial activity uniform and regular so that there may be a minimum of seasonal and periodic unemployment.

The problem of periodic unemployment is two-fold. It comprises that unemployment which results from climatic conditions, and also that which arises out of the natural movements of the business cycle. The former concerns Canada particularly. Owing to the nature of our climate, certain industries are seasonal, and each year a percentage of the population must remain idle during the winter months. This idleness is attended by all the evils and expense of unemployment, in addition to the loss sustained by the country from the non-productiveness of a section of the community. Outstanding examples of these part-year industries are the automotive industries, lake and river transportation and building. There are, however, many other industries which are secondarily affected. In regard to the building industries there already have been movements in some of the cities to carry on building operations throughout the entire year, rather than during the warm months only. Certain pertinent recommendations with regard to this problem were advanced recently by the Employment Service Council of Ontario, as a result of their conclusion that the shortness of the building season was attributable mainly to custom rather than to necessity. Their conclusions embodied the view that experience in winter work would gradually make possible economies which would offset the increased cost. They suggested that departments of the government and municipalities be urged to undertake their construction programmes in the fall rather than late in the spring, in order that the outside work might be well under way before the beginning of the cold weather, so that the inside work could be carried on during the winter months.

In various industries there has always been a seasonal switching of unskilled labour from one type of work to another, for example, a considerable proportion of the labour employed on farms, find work in lumbering and logging during the winter months. Other industries, affected by similar conditions, are road construction, fishing in some sections, etc. This method has been used only to a limited extent, largely on account of the immobility of labour, but might, with advantage, be extended.

With relation to the other phase of the question, which has to do with such undertakings as the automotive industries, the problem is one of finding foreign markets. If the weakness of the automobile accessories market in Canada during winter months prevents the absorption of the output of fully employed industry, then markets can probably be found elsewhere for the surplus so that these industries will be able to operate during the entire year, depending on the foreign market to absorb that part of the output which is not required in Canada on account of seasonal conditions. This method is already being used; markets are being found for motor products in countries whose climatic conditions are the reverse of our own, as, for example, Argentina and Australia. In general the question must adjust itself on some such basis, as this, so that the output of Canadian industry may find markets and be able to operate throughout the entire year.

The other type of unemployment, namely, that which results from the natural movements of the business cycle, exists in all countries. In a period of expansion there is usually a shortage of labour attended by high wages, while as soon as depression sets in, the state is obliged to spend money in unemployment relief measures. The British Government has attempted to solve the problem by spreading out, over the periods of least employment, various public undertakings such as the building of roads and public buildings. It is quite conceivable that Canada may find this a partial solution, particularly in view of the fact that, being relatively undeveloped, she is constantly faced with the necessity of constructing public buildings, highways and railways. While at the moment, unemployment is not serious in Canada, partly on account of the emigration of labour to the United States, it is a problem which must be faced periodically, and the efflux of citizens is a most unfortunate remedy for a problem which is likely to recur annually.

Agricultural Credit.

For some time past a certain amount of criticism has been directed against Canadian banks in connection with the extension of credit to farmers. Considering this fact, and the current discussion at Ottawa relative to the revision of the Bank Act, the provisions of recent legislation in Washington directed to the amelioration of the existing status of agricultural credit in the United States may be interesting. The problem of financing agriculture in Canada is basically the same as in the United States and it may well be asked if any of the provisions previously existing, or recently enacted, might with advantage be adopted in Canada. To understand the provisions of recent legislation we can do no better than quote from the 'Literary Digest' of March 17th.—

"The law provides for a system of twelve 'Federal Intermediate Credit Banks.' The Government puts up $60,000,000 for capital, $5,000,000 for each bank. These banks will take for rediscount farmers' notes presented by banks and by farmers' co-operative associations; that is, they will actually furnish the cash for farmers' borrowings for longer terms than the ordinary three months' loans and for shorter terms than the regular farm mortgage. To raise money for the loans beyond the extent of their capital they may issue tax-free bonds up to $600,000,000. These banks will be managed by the Farm Loan Board, and members of the Board are said to believe that the new institutions will be called on for extending credit principally in the corn-belt States. That is the part of the law which the Eastern newspapers pretty generally object to, as putting the Government into the banking business.

The other part of the law—Senator Capper's plan—provides for what are called National Agricultural Credit Corporations to be managed by the controller of the Currency. The name sounds formidable, but it simply means that any group of farmers, or business men, or bankers, who can raise a minimum of $250,000 for each bank, may set up an establishment to make 'intermediate loans' like those made by the other banks just described, on agricultural and live-stock paper. They can raise more money by floating the debenture bonds, which are not to be tax free. In a general way these institutions will do the large-scale loan business, and there is a provision for privately capitalized rediscount corporations which may stand back of the smaller ones.

The House members of the Conference Committee, realizing that the law was rather complicated, tried to explain their intentions as follows:—

'While the two systems will furnish relief to the agricultural interests of the country, the Federal Intermediate Credit Banks will more particularly take care of the needs of a certain class, and might come nearer than do the National Agricultural Credit Corporations in taking care of the entire needs of the general agricultural public; the National Agricultural Credit Corporations will make certain the caring for, in a national way, of the live-stock and co-operative marketing requirements.'

The law also provides for the continuance of the War Finance Corporation until April 1924, and for certain changes in the Federal Reserve and the Land Bank regulations to make things easier for agricultural borrowers."

It would seem that the provisions of the law aim only to provide additional facilities to cope with the possible inability of existing banks to supply the required credit. There seems to be no intention to provide credit on more extended terms than Canadian banks have always been willing to do. It is perhaps pertinent to point out again that the situation in Western Canada, where the principal demand for agricultural credit arises, is not the same as that which existed in the Western States up to the time of the inauguration of the Federal Reserve system. Except by reborrowing it is obvious that local banks cannot loan more than a certain proportion of their deposits. The situation in Canada is quite different. It is well known that advances in agricultural communities in Western Canada have always largely exceeded total deposits in such districts. We feel safe in saying that the existing legislation in the United States will provide no better facilities than have always been available to Canadian farmers. In interpreting this statement, it must be borne in mind that land values in the United States, on account of its older settlement and larger proportionate population, are higher and more firmly established than is the case in Canada, which minimizes the risk involved. To those familiar with the situation it seems apparent that the financial difficulties of the farmer have in many cases arisen from his ability and willingness to borrow too much money rather than through the limitations placed on his credit.

The root of the farmers' present difficulties is the discrepancy between the price of farm products and of industrial and commercial commodities; in other words, the farmers, speaking generally, have not been able to sell their products at a profit. This situation contains within itself factors which will ultimately force a more equitable price relationship. In the meantime relief must be looked for in economies of operation and distribution.

German Currency and Exchange.

Developments of a remarkable nature have recently taken place in the German exchange situation. The mark at the end of January was quoted in New York at $.00002, that is, fifty thousand marks to the dollar. In the early days of February, it rapidly doubled in value, and has been practically stable since at a quotation of about $.000048, or, approximately twenty thousand marks to the dollar. According to the Reichsbank statement of March 15th, the total outstanding circulation was four thousand, two hundred and seventy-two billion marks, the outstanding issue having been more than doubled in the six weeks preceding that date, the amount of new issues having increased from week to week. Calculating that the depreciation of the mark should follow in mathematical proportion to the increase in the total issue, the quotation on the 15th instant should have been one-half of what it was on January 31st. In other words, if the quotation for marks on January 31st represented their true value, the quotations on March 15th represents five times their actual value. The present quotation has, of course, been maintained by the control of all dealings in foreign exchange by the Reichsbank. How they have been able to maintain this quotation is not altogether clear, but it is quite certain that if new issues of notes continue on an ascending scale,—and there is apparently no possibility of such increase being arrested,—the Reichsbank will not be able to maintain the present quotation for any length of time. It is difficult to understand what object the Government has had in view in stabilizing the foreign exchange quotation of the mark. It is obvious that while this has been going on, the further inflation in Germany must have decreased the internal purchasing power of the mark, and it requires no particular knowledge of economics to see that if the present policy be continued, it must, within a very short time, completely paralyse Germany's export trade. To understand this, it is best to examine a concrete case. For example, a manufacturer in Germany, would, on January 31st, receive for shipments worth $1,000, fifty million marks. On March 15th, for the same shipment he would receive slightly more than twenty million marks, but since, as indicated above, the further large increase in the note issue could not have occurred without depreciating the purchasing power within Germany, and since it is reasonable to suppose that this depreciation should take place more or less in mathematical proportion, the operating costs, reckoned in marks, should have increased 100 per cent. In other words, his costs as against his selling price, reckoned in terms of gold, should be five times as great on March 15th as on January 31st, but it is quite obvious that this could not be the case, because, under such circumstances it would be impossible for any export to take place. On the other hand, the present situation, if continued, must inevitably lead to large imports, since the mark will have a greater purchasing power outside of Germany than within the country. It is, however, obvious that Germany cannot stop exporting and increase her imports. The only other alternative is for the present exchange quotation of the mark to be drastically revised downward. Logically, and if precedents of history had been followed, the mark would have some time ago ceased to be the medium of exchange in the bulk of internal transactions in Germany, and would have been replaced by foreign currencies, but the laws of the country have strictly forbidden internal transactions being undertaken in currencies other than marks. Every possible means have been taken to evade this law. Moreover, the transactions involving payment in money, have been restricted to the smallest possible figure, and those acquiring marks took the first opportunity of spending them. This is the movement widely known as "The Flight from the Mark." As a result of this situation, the depression in the mark has been much faster than in mathematical proportion to the quantity issued. This is clearly seen when it is realized that the gold value of the total outstanding issue of marks before the war, say, in June 1914, was the equivalent of about four hundred and fifty million dollars, whereas, on the exchange quotation for dollars, current on January 31st of this year, the total outstanding was worth only about forty million dollars. During this period, the quantity of marks outstanding, had been increased over

a thousand times. The stabilization of the mark referred to above has had the effect that the total outstanding issue of marks, as on March 15th, would be worth, if valued at current quotations for dollars, more than two hundred million dollars, which, it will be seen, is five times the value reckoned in terms of the quotation of January 31st last, which is another way of stating what has been said previously. The deductions readily made from the above, we think, will demonstrate that the last act of this dreary drama is about over, and that it is only a question of days until the mark loses all purchasing power and ceases to circulate as money.

It is interesting to note that on March 15th, the gold holdings of the Reichsbank exceeded one billion marks, while to redeem the total note issue on the basis of .0048 cents to the mark would require only eight hundred and sixty-two million gold marks. Indeed, on the quotation of January 31st last, redemption would have required only 18 per cent of the gold holdings of the Reichsbank. When the present quotation for the mark was fixed early in February, it was thought by many that this might presage a movement which would crystallize the depreciation at a fixed figure, and eventually lead to the redemption of the outstanding issue in gold. The fact that the Government has permitted the quantity of paper currency to double since the attempt at stabilization, seems to show that this is not their intention.

Pulp from Australian Hard Woods.

Experiments have been made by the Forest Products Laboratory at Perth, W.A., for ascertaining the paper-making possibilities of certain Australian hard woods. These tentative experiments, writes the United States Vice-Consul at Sydney, establish the fact that the pulps from mountain ash (Victoria), blackbutt, spotted gum, mountain gum (New South Wales), karri (West Australia), and silky oak (Queensland) are all suitable for paper making. While silky oak returned the most excellent results, the quantity of this timber is very limited. Among the other hard woods, of which there is an abundance in the Commonwealth, mountain ash was found to return the best pulp and produce the best grade of paper.

The experiments indicate that these hard wood papers are much stronger in almost every respect than a series of imported good office envelope and bond papers taken at random from the laboratory stock. The specimen paper from pulp of mountain ash was found to be stronger in bursting strength and considerably stronger in breaking strain than the choice imported papers.

Summarized, the report issued by the Laboratory shows that: (1) The beating of hard wood pulps has a very marked effect upon the paper product from them; (2) paper stock suitable for numerous uses is obtained by a proper beating treatment; (3) paper produced from the pulp of eucalyptus, after having received the prescribed beating, is as strong as and in some cases stronger than good imported bond: (4) blending to give strength to the paper is not necessary, provided the pulp has received proper treatment prior to running over the machine; (5) in colour, feel, and rattle these hard wood papers are similar to the bleached papers commonly used for stationery.

The Austrian film industry has developed rapidly during the last five years. Owing to favourable geographical position and other conditions essential to the production of films, such as scenery, architecture, and interiors, Vienna has become the centre of this industry for Austria and the States of Succession, as well as the shipping point for the Balkans and the Orient.

In Austria, writes the United States Consul at Vienna, there are about 15 factories producing long and medium length films, six copying establishments, and eight studios with photo rooms, etc. These are all well equipped. Production is steadily increasing, and at present is about 100 middle-length films annually. One-fourth of these are exported. The cost of producing a film of middle length amounts to approximately 25,000,000 Australian crowns, or nearly £400 at the current rate of exchange.

The requirement of Austria and the States Succession is from 700 to 800 films a year. This demand is met chiefly by imports. In 1921, 55 per cent of the imports came from Germany, 20 per cent from the United States, and 25 per cent from France, Italy, Sweden and Norway.

There are more than 400 cinemas in Austria and 200 in Vienna.

Notes from America.

Electrified American Homes.

New York.—How far the comfort of the American home can be increased by electrical devices is demonstrated by the enterprising International General Electric Company in what it calls "Electric Homes," or houses equipped with a wide range of electrical devices and wired according to modern standards, and open for public inspection. During the course of the past year eighty of these "electric homes" were arranged and exhibited, and it is estimated that at least a million people visited them.

The average equipment of these houses is methodically listed as follows :—

Living Room : Fans, radiant heater, fire log, call bell, candlesticks, clock, luminous flower baskets, illuminated pictures and birdcages, cigar lighters, humidifiers, player piano, phonograph, stereopticon, or cinema apparatus, illuminated desk set and work basket, fountain and sealing wax heater.

Dining Room : Coffee percolator, samovar, toaster, chafing dish, waffle-iron, egg boiler, grill, plate warmer, wired tea waggon, buffet and table.

Bedrooms, Bathroom, Nursery : Heating pads, shaving mug, curling iron, hair drier, hair clipper, foot warmer, immersion heater, wired dressing table, violet ray outfit, sewing machine, radio outfit, water heater and toys.

Kitchen, Pantry : Range, fireless cooker, dishwasher, grill-boiler, waffle-iron, egg beater, cake mixer, coffee grinder, ice crusher, ice-cream freezer, hot water heater, water purifier, wired cabinet and table.

Laundry : Washing machine, ironing machine, flat irons, clothes drier and puff ironer.

Garage, Workshop, Yard, and Miscellaneous : Battery charging rectifier, tire pump, bench drill and lathe, abrasive wheels, soldering iron, glue pot, automobile heater and pump for water supply system.

Included in the equipment of the house, such conveniences as an intercommunicating telephone system, door openers, transformers operating the door bell from the lighting circuit, buzzers or pilot lights giving notice that cellar or attic lights have been forgotten, switches automatically lighting dark closets upon opening the door, vacuum cleaners, fans, and portable radiant heaters are features in every room.

Piercing the Rockies.

The wall of the Rockies which divides the North American continent into two halves is at last to be pierced by a tunnel fifty miles west of Denver, which will give America its shortest trans-continental railroad. When this engineering feat will have been accomplished, in about three years' time, the distance by rail between Atlantic and Pacific coast cities will have been lessened some 100 miles.

The proposed tunnel will not only accommodate standard gauge railroad trains, automobiles and other vehicles, as well as telephone and telegraph lines, but it will embody provisions for transmission of power and the trans-mountain diversion of water for municipal uses in Denver and vicinity. The tunnel will be six and a fraction miles long, the estimated cost being approximately $1,000,000 a mile, and it will be cut through solid granite largely.

A veritable empire of natural resources in north-western Colorado, hitherto untapped, will become accessible to development upon the completion of the Moffat tunnel. Construction of the tunnel, it is declared, will insure the building of a railroad line from Salt Lake City, connecting with the present terminus of the Denver and Salt Lake Railroad, which will open the rich gilsonite beds of the Uintah Basin in Utah. Surveys for such a line have been made already.

Government experts report that completion of the Moffat tunnel will open to the world a coal field rich enough to supply the entire United States for the next 100 years. Beyond the tunnel there are 2,500 square miles of oil shales, estimated to contain 50,000,000,000 barrels of oil. The by-product of this shale would total 300,000,000 tons of sulphate of ammonia—enough to fertilize thousands of farms.

Over 10,000,000,000 feet of lumber is now standing on the mountain slopes of the territory to be opened up by the completion of the tunnel. With transportation facilities, which the tunnel would furnish, the early statement and development of a million or more acres of Government lands is anticipated. In this north-western portion of Colorado, stupendously rich in natural resources, there are now approximately 3,900,000 acres of land which the United States holds open to entry. Cattle ranging on the hills west of

the Divide would be stimulated tremendously by the opening of the tunnel, which would make accessible nearby markets.

Of the Government lands open to entry, 625,000 acres are coal lands. The State of Colorado holds for the benefit of its public schools 353,000 acres of land in Routt and Moffat countries in this region, of which, 79,000 acres are underlaid with thick, workable beds of rich coal, according to State reports. Because railroad facilities have not penetrated this wonderland, its vast natural resources have not been developed.

Gold, silver, tungston, copper, zinc, gypsum, asphalt and lead are among the mineral deposits that may be obtained by the tunnel.

The present Moffat Railroad, the highest standard gauge road in the world, reaches an elevation of 11,660 feet at Corona, the summit of the Divide. It is estimated by engineers that snow conditions constitute forty-one per cent of the operating costs of the Moffat road, and that most of this expense is centred around Corona. The tunnel will shorten the present route to western Colorado by twenty-three miles and eliminate the treacherous haul over the top of the Divide as well as numerous snow sheds and a four per cent grade.

It is planned to start work about January 1, 1923, if possible, drilling at both ends of the tunnel. Approximately 600 men will be employed for three years in the construction of the pioneer bore which will be approximately eighty by ten feet. The plans provide that the tunnel be electrically operated, so that trains as well as automobiles and trucks may be hauled through by electric engines. The pioneer tunnel eventually will be used to carry power, light and compressed air for the main tunnel.

RAILROADS AND THE "MOVIE" INDUSTRY.

The United States railroads are collaborating with the motion picture industry. The Santa Fe and Southern Pacific are undertaking to find rare and beautiful natural "locations" for photoplays, and to make all the detailed arrangements for screen companies to journey to and camp at these places. Several "location" railway men are scouring all the territory tributory to their lines, gathering authentic data for directors and producers. The railways' new plans have been joyously greeted by the motion picture leaders, who up to the present, have been spending much time and money in doing this work for themselves. It was in a little town high in the Sierra Nevada Mountains where many spectacular snow pictures have been made that railway activity in the motion picture business first began. In the last few weeks the railways have led production companies to Oxnard, near Santa Barbara, where desert scenes, with camels, Arabs, palm trees, and sand dunes are available. Los Angeles harbour is now being used for water front, shipping and fishing scenes. Lake Tahoe, the Yosemite, and the "Big Bear" regions are all scenes of new pictures in the making.

A BILLION A YEAR LOANED ABROAD.

The extent to which the United States has become the world's banker is indicated by figures recently compiled by the office of the Comptroller of the United States currency. American loans to the rest of the world since 1914 total $21,000,000,000, the largest sum ever loaned by one nation in the history of financing.

Subtracting from this sum the $10,000 millions loan to the Allies, and the two billion dollar interest on it, the remaining nine billions represent commercial credits abroad, dollar securities purchased from foreign holders, and the purchase of foreign currency securities.

It was in the year following the armistice that the tide of borrowing in American markets set in. National governments, provincial governments, municipal governments turned to the United States as the only reservoir of credit.

Figures, recently presented by the Federal Reserve Board, show that outright loans, aside from trade credits, amounted in 1919 to $713,610,033; in 1920 to $576,322,000; in 1921 to $625,820,000 and in 1922 to $869.992 millions.

In 1920 the total was made up of Government and municipal loans amounting to $386,922,000 and private corporation loans of $189,400,000. In 1921 there were $507.070 millions in Government and municipal loans and $118,750,000 in corporation loans, and in 1922 there were $680,565,000 in Government and municipal loans and $189,427,000 in corporation loans.

This money has been used in rehabilitating the world. Australia received $10.758 millions for Government and municipal purposes, and her corporations borrowed $2.5 millions. The Dutch East Indies obtained Government loans aggregating $100 millions. No public loan was made to Belgium, but Belgium corporations borrowed $2.5 millions. Czecho Slovakian public loans amounted to $21.5 millions and $5 millions was lent to corporations in Denmark. Borrowings of French

public communities amounted to $31 millions, and French corporations borrowed $41.975 millions. Public borrowings of the Netherlands in this market amounted to $47.400 millions and Dutch corporations borrowed $18.22 millions. Public borrowings of Jugoslavia amounted to $15.25 millions, Norway $21.575 millions. Borrowings of Latin American countries reached a total of $201.775 millions. Loans were made to Canadian and Newfoundland provincial and municipal governments and corporations to the extent of $258.746 millions. In addition to these loans advances were made to United States possessions aggregating $50.587 millions. Corporations in these possessions borrowed $3.985 millions.

Still another class of loans was made to American corporations of branches of American business in foreign lands. Ten million dollars was lent to such corporations in France, $23.421 millions in Cuba and $2.8 millions in Canada.

Although only $200 millions of direct cash loans went to European countries in 1922, financial assistance none the less was granted to practically the full extent of the volume of all American loans abroad. The loans outlined above by no means represent all of the assistance which the United States has given. There must be added the commodity credits granted to finance the shipment of goods abroad. The loans listed refer to straight issues of bonds and notes. Besides, there is the extensive volume of acceptances and bills running over longer or shorter periods.

New Type of Trade Union.

The Printing Trades Alliance, a trade union which does not believe in strikes, held its inaugural dinner at Anderton's Hotel, Fleet-street. Mr. A. H. Farmer presided over a large company.

Mr. C. E. Allen, proposing the toast of the Alliance, said that trade unions to-day had become essentially political organizations, and as such were a danger both to the State and the individual. He believed the present acute state of unemployment was partly due to strikes, and partly to the inhuman policy of employers in compelling their men to work for a starvation wage. The alliance believed that if only they got employed and employer together at a round table conference it was not impossible to find a way out of the most serious dispute without upsetting the whole industry or bringing punishment upon innocent women and children.

Mr. Harry Dubery, Labour Adviser, Allied Pianoforte Industries, said he believed if they could discover by consultation a reasonable minimum in industry when trade was bad, as well as when it was good, they would go a long way towards solving many Labour problems. If workmen forced up prices by short hours and high wages they had their wives working against them right away, because they would not buy the article. He believed the Printing Trades Alliance was on the right line, and that it would become a model for many other industries.

If the surplus for the year's workings was taxed at half-rate—*viz.*, 2sh. 6d. in the pound, the present rate at which utility societies are taxed—it would have brought in £1,141,576. There is also an undivided profit which is also untaxable amounting to £13,353,027, which equals the net balance of profit and reserve of the retail distribution societies *plus* the wholesale societies which at less than 10 per cent would pay the amount of the yearly tax.

The following short table gives the aggregate net balance of profit (reserve), also the aggregate surplus of the year's workings for the retail distributive societies and wholesale societies for 1921, 1920, and 1919:—

——	Surplus.	Net balance of Profit and Reserve (or Loss).
Retail	£	£
1921	18,265,213	10,697,323
1920	25,697,610	14,385,253
1919	20,906,107	12,454,065
Wholesale		
1921	(—4,504,129)	2,655,704
1920	(—81,420)	4,423,593
1919	1,008,026	4,219,578

Note.—Figures in brackets represent deficiencies.

For the retail distributive societies the surplus on the year's workings during 1921 totalled £18,265,213, whereas for the wholesale societies there was a loss which amounted to £4,504,129,

Fuel Research Board.

By the institution of its research station at East Greenwich the Fuel Research Board has provided an automatic means of correlating the results of theoretical investigations with the requirement of practice, where an essential part may be played by circumstances of which ordinary laboratory work does not take account. A large part of the station's work is, in fact, a laboratory experiment conducted on a works scale under works conditions. This arrangement is calculated to raise the outcome of its experience to a higher plane of usefulness than can be reached by most investigations that have to be made either in the laboratory or under industrial conditions, for even when both methods are employed their results are not directly correlated, says a correspondent in *The Times*.

Though no other basis of research work could be as valuable to industry, an inevitable circumstance of the method is that results must take longer to produce than they do not involve the interlocked method of attack. This does not mean necessarily or even probably that such results will take longer to find their way into industry, for when once they have begun to emerge they are likely to be applicable to variable industrial conditions far more rapidly, directly, and certainly than if either the industrial application has to be based on inferences from laboratory results or the scientific foundation of a process has to be conjectured from merely industrial observations. The recent work of the station illustrates both these facts. No new broad line of progress has been opened out, but on the lines that had already been opened continuous progress has been, and apparently is still being made, and the results obtained are being applied regularly, successfully, and with confidence to the needs of purely industrial works.

Low-Temperature Carbonization.

No part of the Board's work exhibits its peculiar combination of theory and practice more completely than its investigation of low-temperature carbonization, and few, if any, have a higher national importance. It was undertaken in the first instance with a view to providing the Admiralty and the mercantile marine with home supplies of fuel oil, but the violent fluctuations in the price of this commodity threw on the successful production of low-temperature coke an importance almost in proportion to the relative quantity in which it was produced, which is as about seventy of coke to six of oil. In itself the production of a smokeless domestic fuel, if it could be made economically, would go a long way towards solving the problem of smoke abatement; and accordingly the research station undertook the simultaneous investigation of methods for producing the coke and the oil and gas that in such manufacture are by-products.

The first results of this investigation were published during last year. In effect the work fell broadly under four heads. In the first instance a careful examination had to be conducted of the several attempts that with varying success had already been made and were still in progress in industry, and in accordance with the Board's general policy it gave financial as well as technical assistance to such attempts where co-operation was desired on both sides and the necessary control of the investigations was allowed. In the next place, a process had to be elaborated in the light of the considerable experience then available, for which the Board's first experimental plant had to be designed and worked; and this was the more difficult because up to then no method already tried showed such results as were thought to justify its adoption, as it stood, in the contemplated investigation. In the course of this work, at once critical and constructive, lacunæ were found in the available knowledge of the microscopical structure of coke, and these were filled by continuing investigations undertaken some years earlier by Sir George Beilby. Finally, after the process had been settled and the plant constructed, its working results had to be recorded with literally scientific accuracy, and the extent determined to which they could be correlated with laboratory results obtained in parallel, so as to be immediately applicable to other coals, used under the same conditions.

Briquetting.

One of the first practical difficulties in manufacture arose from the fact that some coals, by reason of their fusibility, produced a considerable amount of foam on carbonizing, and their consequent swelling both caused mechanical difficulties in the operation and weakened the product beyond the extent that would be tolerable in use. The result led ultimately to the elaboration and adoption of a method of

controlling the swelling, which consisted of using the coal in a pulverized form (all through a 50-mesh seive), and blending it with similarly pulverized non-caking coal. Mechanically this proved a complete solution of the frothing and swelling difficulty, the volume of the carbonized coke being even less than that of the coal from which it was made; and the first set of large scale experiments was made on trays containing a series of 3 in. cubes of pulverized coal, which with proper blending, were converted into briquettes in a retort mainly through the action of conducted and to a smaller extent radiated heat.

Exploratory trials have since led to the belief that even better results may be obtained by briquetting under pressure and carbonizing in vertical retorts with the help of convected as well as radiated heat, and an experimental plant of original design is being completed for the purpose of verifying or correcting these expectations. The preliminary trials seem to have left little doubt that in strength as well as in structure these briquettes, made under a pressure of two tons per sq. in. and at a temperature well above the fusing point of the fusible coal, but below the temperatures of decomposition, will yield a coke considerably superior to what has been obtained before in respect both of strength and of structure. At the same time the mechanism is much simpler in design and more robust than that which had to be used for the process of carbonization originally adopted; and the results of these trials may advance the prospects of creating a practical and stable industry by a considerable step.

The Board has continued to verify the constant correlation between the results of Gray and King's miniature apparatus by which the laboratory assays are conducted and those of works operations on the same coal. This verification has been made not only, on the coals currently used in the station for the Board's own experimental working, but on a considerable variety of samples sent from different parts of the country, as well as from South Africa, China, and elsewhere. The sustained concordance between the results of large-scale and of miniature laboratory working shows that the necessary determinations of yield of coke, oils, liquor, and gas can be obtained directly from the results of the Gray and King assay, which can thus serve as a satisfactory means of testing the quality and properties of a coal without the more laborious and less satisfactory analysis that has hitherto been necessary. In particular it provides a ready and convenient means of definitely controlling the blends to be adopted for briquettes.

Survey of National Resources.

The physical and chemical survey of the national coal resources was started at the beginning of last year. The Board's scheme is to conduct the survey with the help of local committees at appropriate individual centres, including mine-owners, consumers, and others most closely concerned with the practical aspects of the work of survey and best able to help it with local knowledge and experience. One committee—that for Lancashire and Cheshire—has now been working for twelve months, the work of the Board's local representative having been entrusted to the already existing Coal Research Association for these counties. In other parts of the county considerable volumes of available information have been collected and collated, and a collection of records already in existence as to the correlation of coal seams in Yorkshire, Nottinghamshire, and Derbyshire has been published.

The intention of the survey is, however, to do more than present mere compilations of data and analyses. Its object is to ascertain in the light of local knowledge what problems await solution in regard to the seams of the district, and where desirable to make experiments on a practical scale to test the suitability of individual deposits for particular uses or methods of treatment, the work being carried out at the research station or elsewhere, as may be found most convenient. In one seam in Lancashire, for instance, the available information was collected and correlated, and the seam was then further examined with the object of ascertaining whether this information could be amplified. In spite of the fact that the seam was supposed to be well known and no further information was thought likely to result, some quite unsuspected features have been discovered in the character of the coal. Thus it was found that its composition was neither constant nor uniformly variable. At one part it was particularly fusible and swelled considerably on carbonization; as sampling proceeded along the seam is disclosed another part where, on the contrary, the coal was very dry and hard; and still farther on coal was found of the same character as that first sampled. Investigations are now in progress on a less known seam, with the object of

solving some definite problems that are handicapping the local industry.

Water-gas Production.

The Research Board's setting of vertical retorts has continued to be used as occasion has arisen for steaming and carbonizing coals for companies and owners, and by the use of the method elaborated at the station for determining the "heat equivalent" of settling, the concordance between station results and those obtained by other work on the same coals under the station conditions continues to be observed.

Among the other investigations at the research station, one that is of peculiar interest to engineers is designed to determine the most efficient method of working water-gas plant. In water-gas production alternately coke is heated by the passage of an air blast and steam is decomposed by being passed through the hot coke until the heat absorbed in decomposing the steam has so cooled the coke that the air blast has to be applied again. A problem, that has always divided makers of water-gas plant, is to determine whether it is more economical to keep the coke in a thin layer and heat it with a short, heavy blast, so converting the consumed coke to carbon dioxide, or to have a longer and softer blast through a thicker coke bed, so allowing the carbon dioxide formed at the bottom of the bed to be reduced to carbon monoxide before leaving the producer, and the net rise of temperature of the coke to be less in proportion to the lower heat of formation of carbon monoxide. The results give no universal answer to the question, but, broadly speaking, they show that the thin bed, short and heavy blow, and high temperature are to be preferred when space is no object, while the bed should be made thick and the blow softer and longer when there is greater need for compactness.

In certifying the salt tax the Viceroy used certain arguments which, we are sorry to remark, exhibit an utter lack of perspective. First, the measure was intended to balance the budget. The old proverb, "cut the coat according to the cloth," is applicable as much to national as to individual finance. Secondly, the balancing of the budget was chiefly intended to rehabilitate India's credit abroad. It is a pity that our rulers are blind to the urgent necessity for rehabilitating India's credit *inside* and restricting foreign borrowings and *this* demands that taxes should not be heavy whether on the rich or on the poor. Thirdly, the Viceroy said that the salt tax was at a high level in the 18th and 19th centuries, but he forgets that the income tax, the excise duties, customs duties, stamp duties and a host of other duties did not either exist or exist at such a high level as they do at present. Fourthly, the Viceroy was of opinion that prices of commodities have recently fallen and crops are fairly heavy, especially wheat, and therefore the poor can afford to pay the increased tax. The fact, however, is that in the majority of cases the poor cultivator produces food grains for his own use and is not affected either way by the price-level. Indeed, if prices fall, the cultivator will have to sell more of his produce to meet the permanent charges like the Government Kist and to buy the few other comforts and luxuries of life whose prices have not fallen.

Lancashire is deeply interested in the development of cotton-growing in Australia. That there are many areas of that great continent in which cotton can be produced of excellent quality has long been known, and with the British Australian Cotton-Growing Association hard at work the best results may be expected. The experience of Australian planters has qualified the old theory that cotton could not be produced economically with white labour. Sir George Fuller, Premier of New South Wales, in a most interesting statement he has just made in Manchester, shows that the average yield per acre in Australia is 280 lbs., which compares with 179 lbs. in America with coloured labour, and 85 lbs. in India. With such a yield Australian growers can pay more than the £2 10*s.* per week now given to negroes in the United States.

* * * * *

The Railroad Brotherhoods opened the first labour banks in America some months ago, and the example of these labour organizations was quickly followed by others. Two weeks ago the bank established in New York by the Amalgamated Clothing Workers of America opened its doors. At the inauguration ceremony it was stated that this bank already had deposits amounting to $500,000. At the beginning of June the Telegraphers' National Bank will start business at St. Louis with a capital of $500,000 and reserves of $1,00,000 subscribed chiefly by members of the union.

From Our Readers.

To

THE EDITOR,
THE MYSORE ECONOMIC JOURNAL,
BANGALORE.

DEAR SIR, The failure of the Alliance Bank of Simla is on everybody's lips. Their closing may be taken as a surprise by many, but in fact the authorities responsible for the management of this Bank have done right by taking this action in time. It was rather better to stop the business than to incur further liabilities and losses. The question why a Bank fails really troubles many. Without going further into the economical statistics involved in the problem I might at once say, it is due to lack of working capital that many a concern have to suddenly wind up their business. "Working capital" is the excess of capital available for the conduct of the daily transactions apart from the money invested in the Block A/C. The Bank had certain assets which were, however, laid out on the fixed investments subject to fluctuation out of which there was no chance of immediate release.

It may be within the recollection of many the causes, as disclosed subsequently of the failure of the Rangoon Bank. In this particular case it was noticed that the Directors responsible for the management worked *ultra vires*, in granting loans which were not fully covered by securities. One of the functions of a Bank is to grant loans and it rests with the Governing Directors to fix the securities to safeguard the advances. When there is no chance of realizing this money, the lenders have a right to go to Court to sell those securities to realize their money. But if these securities leave no margin, there is hardly any chance to recover the amount. If the capital be reduced this way it takes no time for any concern, of whatever standing it may be, to come down to clasp like one the modern business world is troubled with.

The income of a Bank is derived mainly from interest on loans and over-drafts. But if the principal lent out is not fully covered, it has all the chance of reducing the working capital.

I do not know whether this was the case exactly in this instance but we must have to wait till the Liquidator comes out with his own facts and figures. It is a lesson to many of our enterprising traders who, with some amount of capital at their commands, immediately proceed to expend nearly the whole of it on the capital outlays, leaving very little cash available for the trade purposes. It does not reflect much credit upon the promoters to invest the whole of the capital subscribed on the initial expenditure and then to run for a loan to put the working of the concern into a profit earning capacity.

I personally do not hold any brief for any depositors or for any credit but I hear that somebody is trying to form a society composed of those unfortunate to enforce their claims. I have very little faith in the post mortem scheme like this which means expenses again and the additional percentage of losses to the aggrieved persons.

Yours faithfully,

Post Box No. 2020,
Calcutta, 9—5—23.

J. L. BOSE,
Vice-Principal,
The Indian School of Accountancy.

It is announced that a British resident in Brazil is about to throw upon the market a new textile product named "fibraso", a plant discovered in that country some years ago, and a company is to be formed for the sale of the article (says the 'Economic Review'). Although the name of the plant will be revealed, the special process of the treatment of the fibre will be kept secret. The fibres are very fine, 6 feet long, and seven or eight times stronger than cotton. They can be dyed any colour, which they preserve; the waste in preparation is only 10 per cent and the product is capable of being sold cheap, and put on the market at the rate of 100,000 tons a year. "Fibraso" resists the action of salt water, and its extreme strength enables it to be used in the manufacture of indestructible fabrics, such as sails, canvas, and belts, and in the preparation of pneumatic tyres.

Books in Brief.

The Individual and the Community.

By R. E. Roper, M.A., M.Ed. Published by Messrs. George Allen and Unwin, Ltd., Ruskin House, 40, Museum Street, London, W. C. 1.

This is a strikingly brilliant production. Sir Adolphus Ward writes an appreciative letter to the author on its excellence, and this letter will be found quoted in full by the reader in the preface to this edition of the book. The book is a plain talk on a serious subject by a thinker and a lover of humanity. People sick of political patent medicines, to use the expressive phrase of the author, will find something new and worthy of their attention in this book. In one word, it is a straightforward statement of the principles, which underlie human activities, and condition the combined efforts of two or more individuals; with a comparison of human and animal communities and state, and a forecast of communal evolution. The head-note to the book calls it appropriately "a handbook of human co-existence." Mr. Roper brings a freshness of view and a knowledge of psychology in the treatment of his subject that is certainly remarkable. One result of the after effects of the war has been to set thinking people to ponder the foundations of human co-operation. In this book Mr. Roper points the way to a wider recognition of the fundamental point of human co-existence. He may be difficult to read, to follow and to digest. But his work is one deeply to be pondered at a moment like this, when the very foundations of human co-existence are at stake. We shall take the privilege of quoting the following concluding sentences of his excellent work:—"It is not by State, or Government, or organization or armament that the world will be made safe for humanity, but by individual effort towards internal harmony. Every effort is of value; every child brought up by natural control and not by external authority is a bulwark against the domination of a group, a living force which in the daily experience of community will achieve a Plus of evolution. We have no need to give up hope, to sink under discontent, or disillusion. Having made the world what it is and ourselves what we are, we may set ourselves with cheerful faith and a sane common sense to help others to make co-existence what we know it ought to be."

Year Book of National Association of Cotton Manufacturers and Cotton Manufacturers' Manual, 1922.

Published by the Secretary, Boston, Mass., U.S.A.

From the Secretary's preface to this *Manual* we note that it is published by order of the Board of Government of the Association with the expectation that it will more nearly meet the requirements of the Association than any book previously issued. The Year Book contains the charter, constitution and by-laws, and a full list of members of the Association as on May 5, 1922. The *Manual*, though said to be still in the making, is replete with useful information in regard to the cotton trade of America and is well worth the attention of those interested in cotton in India.

Plans and Illustrations of Prisons and Reformatories.

Collected by H. H. Hart, LL.D., President of American Prison Association. Published by the Russell Sage Foundation, New York. 1922. Price $2.50 net.

Prisons and prison administration have been so much to the forefront of late in India that this volume prepared by one who knows his subject and presented to the 52nd Congress of the American Prison Association, held at Detroit, in October 1922, ought to prove opportune. The book is fully illustrated and is an excellent example of American book production. It ought to attract wide attention in prison circles in India.

The Mercantile Directory of Mysore, 1923.

Published by the Mysore Chamber of Commerce, Bangalore. Copies to be had of the Manager, Book Dept., Mysore Economic Journal Mamulpet, Bangalore City P.O. Price Rs. 3-8.

A new edition of this reference book will be widely appreciated by the mercantile public of India. It is brought up-to-date, with many new features added to it. It is both handy and comprehensive. To trades people outside the State, a better book cannot be recommended.

The Mysore Economic Journal

A Monthly Periodical devoted to the Discussion
of all Economic Topics of Interest

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Measuring the Wealth of the United States.

By O.P. Austin, Statistician, The National City Bank of New York.

Just how big is the "wealth reservoir" of the United States, to which the world is now looking for the new supplies of capital required after the world suspension of industrial developments which accompanied the war? The down-to-date answer to this question, of the wealth supply of the United States, is about to be given in official form, for the United States Census Office is now busily engaged making the periodical inquiries upon which it bases its decennial wealth census, and the financiers, economists and statisticians of the country and of the world are awaiting the result with keen interest.

The United States is one of the few nations taking a periodical wealth census. There have been various methods utilized in the measurement of national wealth in other parts of the world but few of them are "official" or based on official inquiries. Our official wealth measurement began as far back as 1850 and has usually occurred at decennial periods. For many years it was taken in conjunction with the decennial measurement of population, manufactures, etc., but since the establishment of the Census Office as a pernent factor in the machinery of the Government, the measurement of wealth has been made at a date slightly later than that in which the census force was engaged in the compilation of regular population and industrial returns.

What are the factors by which the Census Office measures the wealth of the country? Real estate, taxed and untaxed; railways and their equipments; live-stock; manufacturing machinery and manufactures; farm machinery and agricultural implements; telegraph and telephone systems; electric light and power stations; and personal effects such as clothing, furniture, carriages, automobiles, etc.

The biggest of these items of national wealth is, of course, real estate. It was put in the wealth census of 1912 at $110 billions, or a little over two-thirds of the grand total, for that census put the total wealth of the country at $188 billions; railroads and their equipments were stated at $16 billions; street railways 4½ billion dollars; electric light and power stations $2 billions; manufacturing machinery $6 billions; and farm implements and machinery a little over $1 billion; agricultural products $6 billions, and manufactured products $14,750 millions.

The total wealth of 1912 was set down at $188 billions against $88 billions in 1900. The increase in the twelve year period from 1900 to 1912 was 110 per cent, while the decennial increase in the ten year periods between 1870 and 1900 had seldom exceeded fifty per cent. The big growth in the period 1900–1912 occurred in real estate valuations and those of the products of agriculture and manufacturing. Real estate valuations jumped from $53 billions in 1900 to $110 billions in 1912; railroads from $9 billions to $16 billions; street railways, telegraph systems, electric light stations and other systems of this character advanced from 3½ billion dollars to $10 billions; manufacturing machinery from 2½ billion dollars to $6 billions; and manufacturing products from $6 billions to $15 billions, while agricultural products advanced from 1½ billion dollars to 5¼ billions. Of the 1912 total of $188 billions, the New England and Middle Atlantic States had $60 billions, the Upper Mississippi section $70 billions, the south $38 billions, and the mountain and Pacific States $20 billions. New York alone had $25 billions, Pennsylvania $15 billions, and Illinois $15 billions.

Much interest is felt as to the showing which the new wealth census now being taken

will make as compared with that of a decade earlier. Of course the enormous activities of agriculture and manufacturing during the war period resulted in extremely high valuations of the farm lands and factories of the country, though the value of the railways did not correspondingly increase owing to the fact that comparatively little new construction was undertaken during the war, while the big fall off in the prices of agricultural products during the past two years may materially reduce the valuation of farm properties which were set down by the census of 1920 at $78 billions against $48,000 millions a decade earlier.

The estimates as to the total wealth of the United States which will be shown by the new census range from 300 to 350 billion dollars against 188 billions a decade ago, and eighty-eight billion dollars in 1900.

Figures on the wealth of other countries are chiefly estimates by statesmen, economists and statisticians, based in most cases, however, on a definite knowledge of certain great basic facts as to assessed valuations of real estate, capital investments, value of transportation systems, banking capital, etc., etc. Latest estimates by persons especially equipped to form opinions in the respective countries put the wealth of the United Kingdom in 1920 at $120 billions; the British Empire as a whole $230 billions; France $90 billions; Italy $35 billions; Japan $25 billions; India $18 billions; Argentina $14 billions; Canada $12 billions, and Australia $6 billions.

Paper from Australian Woods.

The Commonwealth Institute of Science and Industry has demonstrated by experiments that paper pulp of good quality can be produced from Australian woods. Last year, over one hundred thousand tons of paper and wood-pulp were imported into the Commonwealth, principally from Canada and Scandinavia. Some time ago, experts from abroad reported that Australian hard woods were unsatisfactory for pulping purposes. The Institute of Science and Industry, however, undertook an investigation, and has ascertained that by a suitable process paper pulp of good quality can be economically produced so far as the technical procedure is concerned. The kinds of wood pulp used are as follows:—(1) Chemical pulp, which includes soda, sulphite and sulphate pulps, and (2) mechanical or ground wood-pulp. "Kraft" or sheet paper pulp for use in paper mills, has been made from the hoop and bunya-bunya pines, but not remuneratively. The Institute of Science and Industry has, however, made paper with 60 per cent of hardwood pulp the Australian paper mills affording the necessary assistance. This paper is of excellent quality as regards colour, strength, and suitability for printing purposes. The eucalyptus which have given satisfactory results are:—Blackbutt and coast ash (New South Wales), mountain ash, woolybutt, and silvertop, (Victoria), and stringy bark, glumtop, swamp gum, and bluegum, (Tasmania). They are much better in every way than the commonly used poplar of America. In addition to working out suitable methods of treatment, the Institute has collected from the State Forestry Departments all available information as to probable supplies of timber available, water supply in various localities, and other economic factors. The whole of the results are being compiled for publication. The remaining question relates, to the other elements of cost—those dependent on transport of material to pulping factory and labour costs of pulping. These questions are, however, for practical engineers to decide. The Institute of Science and Industry has demonstrated that it is an economic possibility to use Australian hardwoods, and that the process is satisfactory. The papers which can be produced as a result of the Institute's investigations are high grade printing, typewriting, and envelope papers. For newspapers the paper used consists of about 80 per cent mechanical pulp and 20 per cent sulphite. The Institute has made a beginning with laboratory investigations on mechanical pulp from Australian trees.

Valuable results recently achieved by the Dehra Dun Forest Research Institute include the replacement of imported hickory wood by Indian *sundri* for the sucker rods used by the Burma oil wells, the use of pyrogallol to prevent oxidation of Indian turpentine thus enabling that product of Indian resin factories to compete in quality with best American turpentine. It has also been shown that the drug santonin, once chiefly imported from Russia, can be cheaply extracted from *Artemisia maritima*, a common plant in the Punjab, and Kashmir.

Agriculture in Bihar and Orissa, 1921–22.

By "Rusticus".

We are told both in Mr. Dobb's Report and in the Government review of it that the chief event in the history of the Agricultural Department in 1921–22 was the appointment of a Committee to examine the organization and policy of the Department and to make recommendations for such changes therein as might increase its usefulness. The result of the Committee's report has been the reduction in the number of Deputy Directors' charges from seven to four and the abandonment of the scheme for central farms at Muzaffarpur and Saharsa. The cattle breeding herd at Sipaya has been greatly reduced in size and that station is to serve as the sugar station for North Bihar, although the Indian Sugar Committee considered Sipaya an unsuitable place for a sugar station. The educational courses at the Sabour Agricultural College are to be closed down as are also the Entomological and Mycological Sections. The Committee recommended the abolition of the Botanical Section but this has been saved for the present although the two vacant posts of Economic Botanists are not to be filled up. The Agricultural Chemist is apparently to survive unless his estimate of the time required to complete the survey of the soils of the Province is considered excessive. The only recommendation for expansion in any direction made by the Committee was that for the establishment of a small Government farm in each sub-division in the course of the next ten years.

It is, we are glad to think, only in Bihar and Orissa that a wholesale reduction of superior staff, the abolition of educational facilities and the closing down of research work are regarded as increasing the usefulness of the Agricultural Department. The Legislative Council in that Province, in whose eyes the Department has no value, should be satisfied with its handiwork but, for our own part, we think that a budget can be balanced at too great a cost. It is the irony of fate that this blight should have descended on the Agricultural Department at the moment when it was scoring its first real success with Dahia paddy. If the Agricultural Department had "boosted" itself instead of hiding its light under a bushel it would have been better both for it and the Province for its activities might then have escaped curtailment. But it has been far too modest about the work it has done. Dahia paddy, for example, was one of the types selected by Mr. Sil, the Assistant Professor of Agriculture at Sabour, from a sample of paddy of that name obtained from Daltonganj, where the original variety has now almost gone out of cultivation owing to its poor yield. Not a word, however, was said about it by its discoverer in his reports on the Sabour farm. It has made its way entirely owing to its inherent merits and the demand for seed now far exceeds the supply. Even now, Mr. Dobbs does not say as much about it as he might for he does not mention how far its yield exceeds that of the varieties it has displaced. He points out that the evolution of this improved variety, like similar successes in other Provinces, has been due to a thorough study of an important crop by a man on the spot who was, in this case, a College Professor who was never moved from the spot. The spread of Dahia paddy is evidence of what we have always maintained, namely that the Indian cultivator knows a good thing when he sees it. Mr. Dobbs candidly admits that the propaganda involved in spreading Dahia paddy has been insignificant compared with that devoted to lesser improvements which it has been attempted to force on unwilling cultivators against their judgment.

One of the tendencies which the reorganization of the Agricultural Department under Lord Curzon's regime was intended to eradicate was the tendency to fritter away time and energy in numerous desultory experiments, in the hope that, by some stroke of good fortune, a shot would reach its aim. This tendency is not extinct to-day. Mr. Dobbs has some wise words in regard to it. "Men trained in a special method of attacking problems—a method the proper application of which makes the solution of problems merely a matter of time—have been brought from Europe or taken to America and back at vast expense and, after years of experience, have acquired an insight into local problems which centuries of tradition have not given to the cultivator as is proved by the successful introduction of striking improvements in the limited fields in which they are working. It would be madness to force these skilled workers to harvest their crop of results prematurely in order to spread the immature seed

broadcast over the Province on the chance of a plant surviving and reproducing itself here and there. Unlimited propaganda of results that apply to limited areas is simply waste of time and money and before we can pretend to teach the cultivators in the large empty spaces where none of the results so far obtained apply, we must solve problems in those spaces that we cannot even begin to apprehend until one of these men is given a house and farm on the spot." Unfortunately neither the Legislative Council in Bihar and Orissa nor the Committee which considered the policy and organization of the Department has begun to apprehend the problem of agricultural development. Mr. Dobbs is too polite to say in so many words that the one recommendation the Committee made for expansion is, in reality, a retrograde one but he proceeds to give good reasons for so characterizing it. For as he points out, the policy of establishing a small Government farm in each sub-division in the course of the next ten years involves the training of a large number of overseers for these farms. This training can only be given on a farm under somewhat similar conditions and under experienced supervision, in other words, on a central farm. But the execution of the programme for providing a central farm in each of the main agricultural tracts with houses on the farms for the whole gazetted and subordinate staff so that the necessary experience can be acquired by the existing staff of Deputy Directors and the necessary training can be given to recruits has been "delayed". It would seem truer to say "abandoned". The staff of Deputy Directors has been cut down and, in these circumstances, it is difficult to see of what use to the Province a number of small farms in the charge of half-trained overseers is likely to prove. Mr. Dobbs considers that the Department is merely marking time over a great part of the Province for want of the central farms.

In the face of such discouraging conditions, it is surprising that it has done so much. It has established that, in South Bhagalpur, where the soil is specially poor in phosphoric acid, the profits from a combination of green manure with phosphatic manures amount to from 100 to 200 % of the cost of the manures. It has in addition to the evolution of Dahia paddy found a selected variety at Kanke which gives a better yield than the most popular local variety and is being tried on a large scale. The Coimbatore seedling canes have been thoroughly tested and three of them, numbers 214, 213 and 210, have proved promising for early, midseason, and late cutting respectively. Saretha, the heaviest yielder of sucrose of the indigenous varieties, is spreading in the neighbourhood of Sipaya. Varieties of cocoanuts have been obtained from Travancore and are being tested against the local types at Cuttack. Selection work on groundnuts and soyabeans is being continued at the Kanke farm and on cotton on all the farms except Sipaya. The staff of ploughmen is being strengthened so that as "kamdars" they may instruct the cultivators on the spot and at the right time in the cultivation, manuring and ploughing in of dhaincha as a green manure for paddy and the digging of drains and earthing up of sugarcane.

But, when all is said, Mr. Dobbs' Report can only be regarded as a warning and not as an example. So little has been done, so much might have been done in a part of India especially favoured by nature. All who are interested in the progress of Indian Agriculture can only offer him their sympathy in his difficulties and trust that it will not be long before those who have the control of the purse strings in Bihar and Orissa will realize that the worst form of retrenchment is the refusal of funds to a Department the sole object of whose existence is the promotion of the welfare of the people and that just at the moment when the work of years is beginning to yield fruit, "some thirty fold, some sixty fold and some an hundred fold."

The report of the Cyprus Asbestos Company for the period ended December 31 states that possession of the properties was given by the vendors at the beginning of January, 1922. At that time it was found that the installations the vendors had agreed to hand over ready for use were very far from complete. The directors decided therefore, that it would be best to carry out this work themselves. They accepted as compensation from the vendors £5,600. The balance of profit and loss is £23,122, plus accrued interest received from the Middle East Development Corporation, £2,317, making £25,439, out of which the directors propose to pay a preference dividend of 10 per cent on 245,600 preferred shares of £1 each, 15sh. paid, for the year 1922, which will absorb £18,420, leaving a balance to be carried forward of £7,019.

The British Budget.

In a heavily taxed community no Chancellor of the Exchequer can expect to introduce a Budget which will meet with unqualified approval. Mr. Stanley Baldwin, however, has succeeded in putting forward proposals which have been very favourably received and which are assured of acceptance because it is generally agreed that all classes will benefit from the remissions in taxation. In the House of Commons criticism has been directed for the most part against the Treasury policy of debt redemption out of revenue. The Labour Party support the Chancellor but would prefer a more drastic and speedy method of dealing with the Debt, and as a means to this end would adopt the capital levy. Another school, less severe than the Labour Party, would prefer a larger Sinking Fund provision. On the other hand, a third section of the House, composed principally of prominent members of the late Government, were of opinion that the Budget proposals for debt redemption went too far and that, in a period of recovery from trade depression, sinking funds might for a time be suspended altogether. The Chancellor therefore has adopted a policy midway between that of the opponents of debt redemption and the less severe of the sinking fund enthusiasts, and in his reply to his critics was able the more easily to consolidate his position. Moreover, by referring the question of a tax on betting to a Government Committee of Inquiry he avoided a contentious subject though he did not hesitate to indicate that he personally is attracted by the idea as a means of securing a further remission of direct taxation.

Briefly summarised, the position of the national finances and the points from the Budget speech are as follows :—

Financial Year 1922–23.

The Exchequer shared in the progressive improvement which marked the year, and in the actual result revenue at 914 millions exceeded expenditure by no less than 101½ millions, all of which was utilized for redemption of debt. The surplus arose from a reduction in expenditure far in excess of what was thought possible, and from an unexpected saving in interest charges. The real reduction in consolidated fund services was over 30 millions, due almost entirely to the reduced volume of Treasury Bills and the low rates at which they were placed.

National Debt.

The amount at the end of the financial year was 7,773 millions as compared with 7,676 millions on March 31, 1922, the increase in the face value being due, first, to conversions and, secondly, to the capitalization of three years' arrears of interest due on the debt to the United States. The external debt on March 31 last amounted to £1,155,652,000, at par of exchange, as compared with £1,090,184,000 a year previously, and £1,364,850,000 on March 31, 1919. As a consequence of the various conversion operations and the issues of Treasury Bonds the amount of short-term debt, apart from the floating debt, falling due in the current financial year is 84½ millions of 5% National War Bonds, maturing in September and February next.

The amount of the dead-weight debt at various dates is shown in the statement following :—

Gross Dead-weight Debt

(000 omitted)

	External Debt*	Internal Debt	Total
	£	£	£
1914, Mar. 31 ..	—	651,270	651,270
1915 ,, ..	—	—	1,108,817
1916 ,, ..	—	—	2,140,749
1917 ,, ..	—	—	4,011,446
1918 ,, ..	—	—	5,871,851
1919 ,, ..	1,364,850	6,070,099	7,434,949
1919, Dec. 31 ..	—	—	7,998,000
1920, Mar. 31 ..	1,278,714	6,553,030	7,831,744
1921 ,, ..	1,161,563	6,423,847	7,585,410
1922 ,, ..	1,090,184	6,586,111	7,676,295
1923 ,, ..	1,155,652	6,617,854	7,773,506

* At par of exchange

Expenditure 1923–24.

The debt service is taken at £350,000,000, including £40,000,000 for sinking fund. Other consolidated fund services will absorb £30,470,000, and supply services £436,146,000 bringing the total expenditure for the year to £816,616,000, of which £801,013,000 is ordinary and £15,603,000 special expenditure.

In the appended table will be found a comparison of the estimates for 1923–24 with the actual figures for last year and 1913–14 :—

Expenditure (000 omitted)

	1913-14 £	1922-23 £	1923-24* £
National Debt Service.	24,500	323,990	350,000
Northern Ireland.	—	3,323	3,000
Road Fund ..	1,395	11,772	12,650
Local Taxation Accounts ..	9,734	10,471	10,348
Land Settlement.	—	1,236	1,500
Other Consolidated Fund Charges.	1,694	2,704	2,972
Consolidated Fund Services.	37,323	353,496	380,470
Army ..	28,346	45,400	52,000
Navy ..	48,833	56,200	58,000
Air Force ..	—	9,400	12,011
Civil Services ..	53,901	286,826	251,670
Customs and Excise and Inland Revenue Departments. ..	4,483	11,317	11,591
Post Office Services. ..	24,607	49,857	50,874
Supply Services.	160,170	459,000	436,146
Total Expenditure.	197,493	812,496	816,616

* Budget estimate.

Revenue.

On last year's basis of taxation the Treasury calculate that revenue would bring in £852,650,000, or about £36,000,000 more than the estimated expenditure. The proposed reduction in the postal rates, taxes and duties, are expected to cost £34,150,000 in the current year, and £47,250,000 in the year following.

The final balance sheet for 1923–24 is expected to work out as follows :—

Revenue (000 omitted)

	Ordinary £	Special £	Total £
Revenue ..	778,500	40,000	818,500
Expenditure ..	801,013	15,603	816,616
Deficit ..	22,513	—	—
Surplus ..	—	24,397	1,884

From the above it will be seen that the proposed remissions in taxation have been possible owing to the surplus which is expected to arise on special account, and that the amount remaining over for contingencies is a little under 2 millions. Beyond this the Chancellor is not providing any special margin for contingencies.

The amounts estimated to be received from the different revenue sources during the current financial year are shown below and are compared with actual receipts in 1913–14 and 1922–23, and with the amounts which would be received this year on last year's basis of taxation :—

Revenue (000 omitted)

	1913-14 Actual	1922-23 Actual	1923-24 On last year's Basis of Taxation	1923-24 Budget Estimate
	£	£	£	£
Customs ..	35,450	123,043	118,300	116,900
Excise ..	39,590	157,275	155,700	143,850
Motor Vehicle Duties.	—	12,321	13,250	13,250
Estate etc., Duties.	27,359	56,871	52,000	52,000
Stamps ..	9,965	22,222	20,000	20,000
Land Tax and House Duty.	2,700	2,980	3,000	3,000
Income Tax and Super Tax.	47,964	379,045	338,000	319,000
Excess Profits Duty.	—	2,004	12,000	12,000
Corporation Profits Tax.	—	18,977	20,000	20,000
Receipts from Taxes.	163,029	774,738	732,250	700,000
Postal Service ..	21,190	34,150	34,500	33,200
Telegraph Service.	3,080	5,500	5,250	5,250
Telephone Service.	6,530	13,550	14,750	14,150
Crown Lands ..	530	900	900	900
Receipts from Sundry Loans.	1,580	10,016	12,500	12,500
Miscellaneous:—				
Ordinary Receipts.	2,304	24,140	12,500	12,500
Special Receipts.	—	51,018	40,000	40,000
Non-Tax Revenue.	35,214	139,274	120,400	118,500
Total Revenue	198,243	914,012	852,650	818,500

Proposed Revision in Taxation.

Beer.—It is proposed to reduce the duty by giving a rebate on each bulk barrel of beer, whatever its strength, so that retail prices may be reduced by 1*d.* per pint. The full equivalent of 1*d.* per pint is 24*s.* per barrel of 36 gallons, and the cost of the reduction will be borne as to 20*s.* by the Exchequer and as to 4*s.* by the trade. The cost to the Treasury is estimated at £13,000,000 in 1923–24 and £16,600,000 in a full year.

Cider.—The duty of 4*d.* per gallon to be repealed as from May 1 at an estimated cost of £100,000 in a full year.

Table Waters, sweetened or fermented.—The duty of 4*d.* per gallon to be reduced to 2*d.* as from May 1 at an estimated cost of £175,000 in a full year.

Income Tax.—The Chancellor proposed to reduce the standard rate from 5*s.* to 4*s.* 6*d.* in the £ at a cost of £19,000,000 in the current year and £26,000,000 in a full year, the

reduction to take effect as from April 6.

Corporation Tax.—It was proposed to reduce this Tax from 1*s.* to 6*d.* in respect of profits arising after June 30 next. The reduction will involve no loss of revenue this year, and about £2,000,000 next year, and will ultimately involve a loss of £12,500,000.

Postal Rates and Telephone Charges.—Substantial reductions, effective as from May 14, in the charges for heavier inland letters and for inland parcels were proposed, also reductions in the rates on foreign and Imperial letters and for inland printed papers. It is also proposed to effect certain reductions in telephone charges as from July 1. The cost of the postal and telephone concessions in the current year is about £1,900,000, and £2,400,000 in a full year.

Aims of Education.

At the Conference of Educational Associations, Dr. Lyttelton addressed the Assistant Mistresses' Association on "Women's Part in Education." Dr. Lyttelton said that the part women were playing and were going to play in education was an extraordinarily important one. Their influence was growing every year. Referring incidentally to the stubborn resistance of healthy boys to anything the teacher told them he said he always assured the old ladies who at five o'clock tea expressed alarm because rank Socialism, Anarchy, and Bolshevism were being taught in our elementary schools that they need not be afraid. The boy knew how to take care of himself. The more anarchy was taught in the class room the less it would be taken in by the population. Regarding man as a being with a conception of a life higher than his own, he held that education meant putting him into touch with that life. The training which brought the higher life within the reach of the child must be mainly the work of the parents, but teachers and parents were engaged in a common task and if they worked independently of each other it was not likely that the best results would be achieved. The only religion the mass of children were learning to-day was that if they did what was sensible they might reckon on having a good time hereafter. He suggested that teachers, especially women teachers, should get into touch with parents, and the best way would be through the mothers who wished to do what was right, but did not know how Women had the advantage of having no axe to grind and having a greater fund of sympathy than men. That was his suggestion for the principal part women had to take in education now and hereafter.

Speaking again later, Dr. Lyttelton said that among the whole of the working classes the idea of discipline had completely vanished. He had heard parents say before their boys that they did not intend to contradict a single inclination they had. It was his conviction that if that went on uninterruptedly for fifty years, this great country was doomed. People had to learn that self must be put below something else, and in childhood, without discipline, they could not possibly teach it.

At a meeting of the Private Schools Association, Sir Michael Sadler gave an account of the educational innovations of Rowland Hill and his brother, Matthew Davenport Hill in the earlier part of the 19th century. He pointed out that many of Thos. Arnold's ideas were consonant with the ideas of the Hills, and that education was indebted to both for insisting on the idea that a school was a community and that the best way of training young people to bear responsibility in later life was to give them responsibility at school and college. In the main education was a conservative thing. Its chief task was to link the generations each with each. Human happiness depended on some measure on a stable tradition. Schools and Universities were part of the glue which held society together. It was not to their discredit that their prevailing tone had been for centuries conservative. But because education was by habit conservative, it would become fossilized but for its innovators. Innovation was the safety valve. Sometimes the Government turned innovator in national education. That had happened in France, Germany, and more mildly, at rare intervals in England. But individual innovators had done more than Governments to disturb the complacency of established systems of education. Educational innovators always appeared in great numbers at times of revolution. They were a sign of revolution. Some, like Rousseau, were a presage of revolution; others like Arnold, of Rugby, were a result of it. During the last 20 years there had been more educational innovators in Europe than at any previous time. Revolutionary weather suited them. Independent schools, free from control by Government, had been for many innovators in education laboratories in which new methods of education could be tested.

"The Turkish Economic Pact."

"We now have in Turkey, alongside the 'National Pact,' which was succeeded so brilliantly," says the Journal of the American Chamber of Commerce in Constantinople, the 'Economic Pact.' This latter was elaborated at a great Economic Congress held at Smyrna in the last half of February, at which 1,135 delegates are said to have been present, representing industrial, commercial, agricultural and labour elements throughout the Turkish State. At the second plenary session of the Congress it was unanimously voted to abolish the Tobacco Regie, which controls the manufacture of tobacco in Turkey, and to insist on absolute freedom for the culture and commerce of tobacco, and at the closing session Kiazim Kara Bekir Pasha, the president, made the following speech :—

"'Our country, while admitting foreign capital, will in the future throw itself into the arena of competition in order to try to realize its aims by its own forces and to get rid of the necessity of bowing down before foreign products. In normal times, and practically in 1327 (1911), our imports amounted to 53,930,000 Turkish gold pounds, while our exports were hardly 30,702,000. In other words 23,228,000 Turkish pounds of our national patrimony flew abroad. Since then our exports have continued to decrease and last year they amounted only to 23,190,000 Turkish pounds against 39,876,000 of imports. Former statistics would show the same lamentable picture of decline. This is due, on the one hand, to our ignorance of economics and, on the other hand, to calamities which have transformed our country into a heap of ruins. Before the war our annual export of animals amounted to millions of Turkish pounds, while to-day we have remaining hardly 20 million Turkish pounds' worth. During 1338 (1922) we imported from Germany, the United States, Switzerland, Belgium and Bulgaria, nine million Turkish pounds' worth of cattle, foodstuffs, fish, skins, leather, furs, fats, etc. These are so many millions thrown into pockets of others. Animals figure here for four millions, and fish—although our country is three-quarters surrounded by water—for two millions. This is nothing else than the result of our bad system of domestic economy. We begin by nourishing our babies with foreign milk, we clothe them with linen from abroad, we put them to rest in cradles made abroad, we decorate their heads with false pearls from abroad. As the fruit of two weeks of intense effort we have produced a work which we present as a gift to the nation. Let us make it ready for a more grandiose reunion next year, and in the meantime let us work hand-in-hand to obtain during the coming year the advantages of many years together.'

"This 'gift to the nation,' in the form of the 'Economic Pact,' contains the following 12 fundamental points :—

(1) In the limits of its frontiers, Turkey, enjoying complete independence, constitutes an element of peace and progress in the world.

(2) The Turkish people, having obtained their national sovereignty at the price of their blood, will no longer suffer the least sacrifice in this respect. They will give their support always to the Assembly and to the Government which have for foundation the popular sovereignty.

(3) The Turkish people are not factors of destruction. On the contrary, they are elements of construction. Their works tend towards the economic uplift of the country.

(4) The people are trying to produce as far as possible articles for their consumption. They are hard at work. They are trying to avoid waste both of time and fortune. Their desire is to work, if necessary, day and night, to make the national production prosperous.

(5) From the point of view of natural resources and wealth, the Turkish people are conscious that they possess golden treasures. They love the forests as if they were their children. That is why they celebrate the fete of the planting of trees and proceed to re-afforestation. They exploit their mines to produce by themselves and try to understand their natural resources better than anyone else.

(6) Theft, lying, hypocrisy, laziness—these are our deadly enemies. A solid faith, free from all fanaticism, is the fundamental principle of our life. We will adhere always to useful innovations. The population of Turkey rejects with disgust the agitations and propaganda undertaken against its sacred traditions, its soil, its property and its fellow-citizens. It considers that it is its duty to fight against every threatening manœuvre.

(7) The Turk is the hearty friend of enlightenment and of the sciences. He forms himself and organizes himself in such a way

as to be able to gain his existence everywhere. But above all he is the child of his country. The fete of the book, which he celebrates at the anniversary of the Conception of the Prophet, gives the measure of the importance that he attaches to public instruction.

(8) Our ideal is to ensure the increase of our population decimated by wars and privations of all sorts, and to guarantee our health against illness. The Turk avoids microbes, contaminated air, filth and epidemics. He loves pure air and cleanliness. He tries to develop his physical force and with this in view he practises horsemanship, shooting and hunting, which were the favourite exercises of his ancestors. He takes great care of his animals and he occupies himself with the betterment and increase of the race.

(9) The Turk is always the friend of people who are not against his religion, his life and institutions. He is not the adversary of foreign capital. But in this country he entertains no relations with organizations incompatible with his laws and his language. Everywhere he draws from the springs of science and the arts. He repudiates every intermediary in his relations.

(10) The Turk loves to work freely and does not want any monopoly in business.

(11) In his consideration of class and profession the Turk sympathises with his compatriots. He lives with them in perfect accord. He organizes excursions in order to understand the country better.

(12) The Turkish women and the Turkish schoolmaster form the children in accordance with the prescription of the Economic Pact.

"This 'Economic Pact' has been strongly criticized and particularly by the Turks themselves, who profess themselves as profoundly disappointed at the lack of practical suggestions contained in its twelve articles. That a congress of business men, met to discuss the best means of re-establishing the economic life of the country, could have produced such a document, is only possible in Turkey."

Land for Sugarcane Factories in U. P.

A Government Order, dated Allahabad, the 11th June, issued by the U. P. Government, says:—The Indian Sugar Committee in the 315th paragraph of their report, after discussing the difficulties at present experienced by persons desirous of taking up leases of the land which they require for the establishment of sugarcane factories, recommended that such persons should, on application, be allowed the services of Government officers, of a rank not lower than that of a Deputy Collector, to assist them in carrying out the negotiations involved. They also recommended that Crown waste lands should, in suitable cases, be granted to facilitate the establishment of such factories.

2. The Governor, acting with his Ministers, has carefully considered these suggestions. He regrets that, so far as Government have been able to ascertain, there are no Crown lands within these provinces which could suitably be given up for purposes of sugarcane development. He is, however, anxious to assist promising schemes for the establishment of sugarcane factories and in cases where promoters of such schemes have failed by private negotiation to secure the lease of suitable land and find the advice and assistance of Government officers with revenue experience essential if their schemes are not to be abandoned, would be ready to consider requests for the grant of such assistance. If convinced that a scheme was promising and that the request for Government assistance was reasonable, he would be willing, on terms suited to the circumstances of each case, to make the services of an officer of a suitable rank such as a Deputy Collector or Tahsildar, available. The form which the assistance of such an officer would most probably take, would be the giving of advice as to local conditions of land tenure and as to the methods by which voluntary sale or lease of any land required for the factory could be arranged; the lending of the services of such an officer would, however, in no way, imply any association of Government with the scheme and the owners and cultivators of land would be under no compulsion whatever to part with their land to the factory, if they did not wish to do so. For the purpose indicated, the placing of officers on special duty should rarely, if ever, be required, and the necessary advice and opinion should be given without interruption of the officer's ordinary duties. Applications for assistance of the kind now contemplated should, in necessary cases, be made to the District Officer concerned, who will consider them and give such help as seems suitable.

The Cambridge Economic Handbooks.

By Alfred J. Saunders, M.A., F.R.Econ.S., American College, Madura.

Dr. Lewinski in his recent book—The Founders of Political Economy—has said: "Taken as a whole, however, the theoretical advances of political economy since Ricardo's Principles are comparatively very irrelevant. The last decades especially have been very barren..... The Great War has clearly shown of what little use all our economic knowledge has been where most simple theoretical problems had to be solved?" It is true that the Great War has tried all economy theory as by fire, and we may be sure that some of the old theories will pass away, yet there are distinct evidences that we are entering a day of new interpretation and application of economic principles. We can confidently look for the publication of some real contributions to economic theory in the near future.

A very creditable attempt along this line is an interesting and suggestive series now being published under the general editorship of Mr. J. M. Keynes, M.A., of King's College, Cambridge, bearing the general title—The Cambridge Economic Handbooks. The first two volumes of this series are before me, and the reading of them has given me much satisfaction. The books are written in a free and simple style, and are well adapted to the needs of College students, and "the general reader will find in them what he is looking for—an up-to-date restatement of economic principles which will really help him to understand the crucial economic problems of the day." The series calls for the following six studies, the first three of which have already been published: Supply and Demand; Money; Public Finance; The Distribution of Wealth; The Control of Industry; and Population. The University Press, Cambridge, is publishing the books, and the price is only five shillings each.

The aim of the series is to give a systematic exposition of Economics from the present-day standpoint. Mr. Keynes, in his general introduction, says:—

"The Theory of Economics does not furnish a body of settled conclusions immediately applicable to policy. It is a method rather than a doctrine, an apparatus of the mind, a technique of thinking, which helps its possessor to draw correct conclusions.... Before Adam Smith this apparatus of thought scarcely existed. Between his time and this it has been steadily enlarged and improved.... It is not complete yet, but important improvements in its elements are becoming rare. The main task of the professional economist now consists, either in obtaining a wide knowledge of relevant facts and exercising skill in the application of economic principles to them, or in expounding the elements of his method in a lucid, accurate and illuminating way, so that, through his instruction, the number of those who can think for themselves may be increased."

The first volume of the series is Supply and Demand by H. D. Henderson, Fellow of Clare College, Cambridge, and University Lecturer in Economics. He points out that economic theory must rest upon fact, the ordinary every day facts of common experience. "The purpose of economic theory is not merely to describe the facts of the economic world; it is to describe them in their proper sequence and true perspective." In the whole question of Supply and Demand we must recognize that "man lives by co-operating with his fellow-men." An important thing to remember right at the very start, is—"somehow it comes about that an equilibrium is established between the demand for and the supply of every commodity; and that this applies to wool and mutton, to beef and hides, as surely as to commodities which are produced quite independently....A strong prevailing trend towards an adjustment of demand and supply is unmistakably manifest amid all the vagaries of changing circumstance."

The cornerstone of economic theory is found in these three laws:—

(1) When, at the price ruling, demand exceeds supply, the price tends to rise. Conversely when supply exceeds demand the price tends to fall.

(2) A rise in price tends, sooner or later, to decrease demand and to increase supply. Conversely a fall in price tends, sooner or later, to increase demand and to decrease supply.

(3) Price tends to the level at which demand is equal to supply.

Our author then indulges in a helpful discussion on the problems of utility and cost. Of utility he says: "The marginal utility of a commodity to anyone diminishes with every increase in the amount he has..... We can

therefore, say in general terms that the price of a commodity measures approximately its marginal utility to the purchaser." Of cost he says: "A commodity tends to be produced on a scale at which its marginal cost of production is equal to its marginal utility, as measured in terms of money, and both are equal to its price..... The price, then, of a commodity tends roughly to equal its marginal cost of production."

Mr. Henderson then takes up and discusses at length—Land, Enterprise, Capital, and Labour. The last chapter is devoted to the Real Costs of Production, and he discusses them in terms of utility.

The whole book is most interesting and suggestive; it will prove, I am sure, very helpful to Indian students; and if this first volume sets the standard for the rest, the series will become popular and be a real contribution to the presentation of economic theory.

The second volume is—Money by D. H. Robertson, Fellow and Lecturer of Trinity College, Cambridge, who says in the Preface: "Its connection with its predecessor—Mr. Henderson's Supply and Demand—is to be found in the emphasis laid on the theory of money as a special case of the general theory of value. Its bearing upon the remainder of the series is to be found in the conclusion to which the book leads up, that money is after all a fundamentally unimportant subject, in the sense that neither the most revolutionary nor the "soundest" monetary policy can be expected to provide a remedy for those strains and disharmonies whose roots lie deep in the present structure of industry, and perhaps in the very nature of man himself."

The chief discussions deal with The Value of Money; The Quantity of Money; The Price-Level; The Question of the Standard; The Foreign Exchanges; and Monetary Policy. By money our author means—"anything which is widely accepted in payment for goods, or in discharge of other kinds of business obligation." The function of money is to enable a man as consumer to generalise his purchasing power; to concentrate his attention on his own job, and so to add more effectively to the general flow of goods and services which constitutes the real income of society; and to facilitate the making of loans and payments in advance of all kinds. But we must remember this that "money, which is a source of so many blessings to mankind, becomes also, unless we can control it, a source of peril and confusion."

As to the value of money, "we mean the amount of things in general which will be given in exchange for a unit of money." The demand for money, its velocity of circulation, and the amount in circulation all influence its value. In a general way we may say that the value of money is determined primarily by two factors—the conditions of demand for it, and the quantity of it available. The quantity of gold depends on its cost of production, and its value tends to equal its cost of production.

Mr. Robertson then proceeds to a full discussion of the vagaries of the price-level. As to the question of the standard our author thinks that for the present the gold standard will serve the country best, but sooner or later he hopes for the creation of a new standard, and thinks that Professor Irving Fisher has made a suggestion along this line which later on should receive careful attention. For the present, however, Mr. Robertson wants the financial condition of the world to settle down before any new experiments are attempted with our money mechanism. He says—"Just so gold is a fetish, if you will, but it does the trick."

In reference to the regulation of the foreign exchanges Mr. Robertson is ready to advocate the establishment of an international authority for the purpose of keeping the value of international money stable in terms of things in general. He has much of interest and suggestion to say on this question. His general conclusion is:—

"Some reference has now been made to most of the pressing monetary problems of the present day. It is important that those problems should be solved rightly; but it is equally important that we should not expect too much from their solution. The real economic evils of society—inadequate production and inequitable distribution—lie too deep for any monetary ointment to cure. A 'liberal' monetary policy might produce an atmosphere of confidence and elation, a 'sound' one might restore a certain jejune stability: neither can turn a world which is unjust and poor into a world which is rich and just. The mending of the road over which the produce passes to market is no substitute for the digging and dunging of the fields themselves. No tinkering with counters will take us very far towards the discovery of an industrial system which shall supply both adequate incentives to those who venture and plan,

and peace of mind to those who sweat and endure."

Now, I recognize that the above is a very inadequate review of two excellent books. My purpose was simply to give your readers a faint idea of this series of economic handbooks, which, I am sure, will be highly appreciated by the students of economics who are fortunate enough to get the volumes and seriously study them.

A New Use for Sisal Refuse.

A recent writer discusses at some length the possibility of using, on a profit-yielding basis, the residue from sisal estates, *i.e.*, waste fibre for paper-making and the liquor for motor spirit, and gives in a recent issue the following particulars to show how such waste can be utilized, with less trouble and expense, in the making of briquettes for fuel. *En passant*, we would like to add, he says, that, indirectly, we owe these details to an enquiry from our old friend, Mr. William Cradwick, of Jamaica, for a very small sisal-rope making machine which caused us to write to Messrs. Shirtliff, asking whether, perchance, they knew of such a machine, "I am sorry," wrote Mr. Shirtliff, "that I cannot help you with the small rope-making machine for sisal. I have been after the same thing myself for some time, but it is too small a job to get enthusiastic over, although, if I could only get an expert drawing I would soon make one that would do; evidently there is a demand for some such machine, which makes me all the more anxious to get busy on one."

Following on this came some particulars of the Bijoli briquetting press for sisal refuse, including the following :—

As the market price for sisal is not what it was, and not what planters would like it to be, anything to help the economical working of an estate is a matter well worth consideration. Now one of the appreciable items in the cost of running a Sisal Factory is the cost of fuel, and if this could be eliminated it would be a distinct gain in economy. As, therefore, in your refuse you have fuel enough, if properly handled, to run your entire plant, and then leave a considerable amount unconsumed, which could most probably be profitably disposed of, why not make the most of such things, which can be done by briquetting the refuse.

The average decorticating plant turns out about two tons of sisal per day, and we will take that figure to work from.

To obtain that amount of fibre you have to use about 40 tons of leaves; the residue from which amounts to approximately 90 per cent (see the *Journal d'Agriculture Tropicale*, No. 108, June, 1910). Most owners will corroborate these figures at once.

This residue, amounting to 36 tons (90 per cent of 40 tons), contains 75 per cent of moisture, and 25 per cent of combustible matter. 25 per cent of 36 tons is 9 tons, and this is the amount you are interested in.

The calorific value of this residue or refuse is 7,500 B.T.U. per lb. when dry, or if allowed to contain 14.4 per cent of moisture, the calorific value would be 6,400 B.T.U. per lb. (according to tests made by the National Physical Laboratory, Teddington).

This is about half the value of ordinary average coal, and therefore your nine tons of refuse are worth about 4½ tons of coal per day. Can you afford to throw this away? Surely not. At the same time, ascertain, when working forty tons of leaves, whether you burn this amount of coal or its equivalent.

The refuse gives about 8.5 per cent of ash or a total of about 15 cwts., which, as you are also well aware, has valuable manurial properties, and being easily handled, would be no trouble to dispose of if you do not return it to your own land when cleaning out your furnace.

The machinery necessary to do this would be :—

(1) A perforated screen belt conveyor to bring the refuse from under the decorticator to :—

(2) A roller mill which would get rid of about 50 per cent of the moisture.

(3) A "Bijoli" patent briquetting press, to make the refuse into briquettes. Whilst doing this, you get rid of the greater part of the remaining liquor, leaving about 15 per cent only in the blocks.

The briquettes or blocks turned out by this method are easy to handle, to store away or to stoke with. Many tons can be stored in a comparatively small space, whilst you can run off the liquor on to the manure heap, and, by keeping it moist, check the loss of ammonia.

Industrial Fatigue Research.

The Annual Report of the Industrial Fatigue Research Board for last year has now been issued, dealing with its work for the fifteen months ended December 31. The Board's operations have been impeded by industrial depression. The industrial atmosphere has been generally unfavourable to the introduction of new ideas and methods, industrial bodies having been fully occupied with urgent economic problems; and the Board has not thought the time opportune for any definite attempt to secure industrial co-operation, though a start has been made on an investigation undertaken conjointly with the Glass Research Association. The need, too, to chop and change shop work so as to catch any slight commercial breeze that might be stirring has been unfavourable to observations on the general interrelation of work and fatigue to which the Board has hitherto given most attention, though some information has been collected on the relation of industrial depression to fatigue, which might have been more extensive if the Board's resources had been larger. On the other hand, work, such as laboratory research, which is unaffected by conditions of trade, has gone ahead.

The constitution and organization of the Board continue to be enlarged and strengthened, at least in respect of the important aspect of academic science. Dr. C. S. Myers, the Director of the National Institute of Industrial Psychology, has joined the Board, and three classes of committees have been formed, dealing respectively with the scientific and industrial aspects of the work, with special investigations on Post Office work, and with the legibility and optical properties of paper and ink in relation to eye-strain. In particular the scientific committees appear by their membership to make all possible provision for the needs of their own aspect of the work. They deal respectively with industrial health statistics, the physiology of muscular work, the physiology of the respiratory and the cardio-vascular systems, and industrial psychology, and include both men of science of the highest standing in their particular branches of work and some who have given special attention to applications such as those of physiology. The industrial side of the work is represented by committees, whose functions seem to be advisory, and who are consulted from time to time when their guidance is considered desirable. The special committee on Post Office work, composed of two surgeons, a psychologist, a physiologist and a lady member of the Board, seems an imcomplete body to be dealing with a subject having the many complexities of practical work; but the committee on legibility of type, in addition to the distinguished oculist who is its chairman, a physiologist, a psychologist, and a secretary who is also a physiologist, has secured the co-operation of Mr. Legros, who dealt with the technical aspect of the matter for the Treasury Committee by whom the present investigation was suggested.

General and Industrial Inquiries.

A certain amount of work has been done on general investigations, most of which are still in progress. Perhaps the largest of these is one into the optimum division of the working day, most of which apparently has still to be done. While no opinion as to its value can be formed at the present stage, it is to be observed that the question is one on which the circumstances of every trade and every locality may have an important bearing, and no successful result is probable unless the investigators include persons who not only are trained and skilled in scientific investigation, but also possess the knowledge and authority that arise from familiarity with these circumstances at first hand. Statistical studies have also been made on the relation of temperature, etc., to the incidence of accidents and on sickness and mortality as related to certain occupations, and the Board or its statistical committee has shown an excellent example in scrapping a great deal of the latter work on the ground that the period of observation turns out to have been too abnormal to justify it as a basis for general conclusions. Professor Muscio's work on the relation of accuracy of movement to speed and to duration of work, previously noted in these columns, belongs also to the period under review.

A certain number of observations on individual industries has been worked up and some conclusions published. These include as their most voluminous part a series of important studies of various branches of the textile trades, which, though leading to no very new conclusions, have done a great deal to define and confirm beliefs already current, and to extend practice in the use of methods of investigation. Some information has also been

collected and published on the boot and shoe industry, the pottery industry, and the laundry industry, which, it is to be hoped, may be found serviceable. A certain interest attaches to an investigation in the glass industry, partly because it is being done jointly by the Board with the Glass Research Association, and partly because the report gives no indication of what it is all about. An investigation is also in progress into the nature, cause, and possible prevention or amelioration of telegraphist's cramp, which may lead ultimately to a more general inquiry into Post Office work.

Among some variety of researches on fundamental points it has been found (says a *Times* correspondent) that in horizontal walking and running—that is, in muscular movement by which no external work is done—increase in speed beyond a certain rate is not accompanied by increase in consumption of oxygen, which is probably limited by the maximum capacity of the lungs and heart to supply oxygen to the tissues, whereas up to that rate the oxygen consumption increases approximately as the square of the speed. For movements involving external work there is—as in ordinary life there is always supposed to be—an optimum speed at which efficiency is at its maximum, which is said to be 25 per cent. During exercise the body draws on its own stores for oxygen to an extent depending on the severity of the exercise, and makes good the deficit within a few minutes of ceasing work. In all exercise this deficit is set up at the outset and maintained until the exercise ceases and recovery begins; but its amount is different according as the expenditure of energy is or is not within the limit set by the capacity of the lungs and heart. When the energy spent is within this limit the deficit of oxygen, though it increases with the speed, is constant for any given speed, however long it is maintained, and is equal to the excess of oxygen restored during recovery; so that from the point of the muscular machine the exercise might be kept up indefinitely. When, however, the energy spent exceeds what the heart and lungs can supply the deficit of oxygen increases continuously with the time, and lactic acid accumulates until exhaustion ensues. On these facts it seems possible usefully to distinguish a speed of work below which exhaustion through accumulation of waste products will not occur. Similarly a relation has been found between fitness for mild and for strnuous exercise respectively, and the ratio of pulse-rate after exercise and while at rest, the ratio for fit men tending for mild work to be lower than for others, and for strenuous work higher. These results may furnish a means of testing individuals for suitability for certain kinds of work.

Machine Design.

The report gives particulars of various investigations in progress or in contemplation, among which is one that should be of special interest to engineers, if it is planned and carried out with due regard to practical conditions. In investigations in various industries it was found that the design of plant and machinery was not convenient for the operator. In some manufactures, indeed, such as typewriters and motor-cars, such convenience is an essential purpose of the designer, and may be left to his devices; but in others operative convenience seems to have been overlooked as compared with mere mechanical efficiency, and the Board is said now to be considering the initiation of an inquiry into the design of various types of machine in order to ascertain whether any principles can be evolved to indicate the proper relation of machine to operator.

This certainly appears to be a happy inspiration. As experience showed in the improvisations of the war, extraordinary savings could often be made in labour and fatigue by what appeared to be really trifling alterations in the design of machines, or even sometimes in the positions of the machines relatively to the object worked on and the operator. This certainly was no new discovery, for modifications of this kind were used repeatedly, with remarkable success, by Taylor and Gilbreth thirty years ago; but they seem to have led to no general investigation such as now appears to be intended, and there is undoubtedly a vast amount of wasted energy that could be saved if the matter received the attention it deserves. Unfortunately the applications are so general that they fall into the category of things which are everybody's business and therefore no one's; and problems that must be so classed are essentially the proper subject-matter for the attention of public bodies, which can do work that otherwise is not likely to be done at all.

Industrial Science.

What seems now to be in question is whether the Board has or will procure for its investigations the expert guidance that is indispensable to its success. This is not to be done

by putting a physiologist into overalls and calling him an industrial expert. The knowledge and experience that are necessary cannot be improvised. They involve, on the other hand, a mechanical and technical training that can only be obtained by a prolonged apprenticeship at first hand, and, on the other hand, a familiarity with industrial science without which no industrial work can be trusted. Industrial science is often less imaginative than academic or laboratory science. It is tied down, as laboratory science is not, to works conditions settled in advance, and is not entitled, and even bound, as laboratory science is, to go on making simplifying assumptions until the problem under investigation has been reduced to manageable dimensions. It has mostly to work with material having a far lower order of accuracy. But with these handicaps it has the benefit of a discipline that laboratory science often is free to discard—the discipline of having to live with the unmitigated consequences of what it does. It may have to investigate a problem under conditions in which some change may offset the entire range of variation under investigation; but though it may have to admit its results to be inconclusive, it cannot escape from them by some brilliant conjecture, unless this can be verified in the circumstances of the works. In questions affecting engineering practice the knowledge, experience, and discipline by which results can be obtained in such conditions are available only to those who have been trained to get them; and an indispensable condition of success in such investigations is that they shall be planned and conducted with the intimate co-operation of an engineer, or engineers, trained in this comprehensive branch of his profession.

Railway Electrification.

At a moment when several very important railway electrification schemes are proceeding in Europe it may be of special interest to observe the steps being taken in that direction just now by Japan, the Britain of the Far East. According to the Journal of the Yokohama Chamber of Commerce, the estimated costs of such construction are 31,726,500 yen, of which 21,983,000 yen will be spent in line equipment and the balance, 9,743,500 yen, on rolling stock. The entire work is expected to be completed by the 1928-29 fiscal year. During the present year only 300,000 yen will be spent in line equipment and nothing on rolling stock. The greatest expenditure will be made in the last year, 1928, when 6,183,000 yen will be spent on line equipment and 3,828,500 yen on rolling stock. Electrification of the line between Tokio and Odawara is to be completed by the end of March next and of that between Odawara and Numadzu by the 1926-27 fiscal year. The cost of the former and the Ofuna-Yokosuka branch line is estimated at 4,000,000 yen for construction of line and 5,650,000 yen for rolling stock, and in addition to these amounts 500,000 yen will be used for the construction of workshops, car-sheds, etc., making the total for these two lines 10,150,000 yen. It is estimated that the line between Numadzu and Odawara will be built at a cost of about 1,100,000 yen. When all the costs of construction of the lines near Tokio are added to the estimated costs of the line between Numadzu and Akashi (near Kobe) the total cost of the electric line reaches something like 42.876 million yen. All the activity being developed in various countries in the matter of railway electrification represents a boom in the electrical engineering and allied industries of Europe.

In view of the widespread interest now being taken in the question of the taxation of Co-operative Societies, some particulars concerning the financial results of these undertakings in recent years will be found instructive, says a correspondent of "The Times Trade Supplement."

In 1921 the retail distributive societies in Great Britain had a net balance of profit, (or reserve) of £10,697,323, and the wholesale societies in the same year had a balance at reserve amounting to £2,655,704.

The total liabilities of the wholesale and retail societies totalled £122,397,838, which at 5 per cent dividend amounts to £6,119,892.

The surplus on the year's workings for retail distributive societies alone, £18 265,213, is about 15 per cent of dividend; whereas £21,246,089 was allotted as interest on shares dividend on purchases, and bonus to employees. It would seem therefore, that about £2,980,876 was taken from the reserve (*viz.*, the undivided profit for 1921) in order to bring the surplus for the year's workings up to the amount needed for allotment.

India's Imports.

The share of the United Kingdom in the import trade of India in 1921–22 was 57 as compared with 64 per cent in the last pre-war year; but other British countries advanced their contribution in the period from 6 to 10 per cent, so that on balance the quota of foreign countries has grown only from 33 to 33 per cent. In the total overseas trade both the United Kingdom quota and that of foreign countries have fallen since the war by 2 per cent each, while that of other British countries has advanced from 11 to 15 per cent.

The position of the United Kingdom *vis-a-vis* other countries and of Indian manufactures is examined in careful detail by Mr. Thomas Ainscough in the report on British Trade in India which was generally reviewed in these columns last week. In this detailed examination the first place and fullest treatment is given to cotton textiles. H. M.'s Senior Trade Commissioner notes an increase in quantity but, owing to fall in prices, a diminution in the value of imported yarns. The principal quantities of increases are under the heads of 40's and counts above 40's grey yarns. Bleached yarns show an increase of 25 per cent, while all types of coloured and mercerized spinnings (above 20's) show a decline. The United Kingdom has improved her position and now supplies 70 per cent in weight and 76 per cent in value of the total imports. Consignments from Japan have been reduced by one-half. In counts below 30's the Indian mills monopolized the markets. It is only in 40's and upwards that real competition begins.

The severe reduction in the total imports of piece-goods since 1913–14 is brought out in tables which show (in millions of yards) reductions in grey (unbleached) goods from 1,534 to 635; in white (bleached) from 793 to 306; and in coloured, printed, or dyed goods from 831 to 138. The falling off in yardage as compared with 1920–21 was primarily due to the enormous stocks of high-priced goods which were carried over from the previous period; and it follows that the figures for the last fiscal year cannot be regarded as normal. In respect to the enormous reduction in printed, dyed, and coloured woven goods, while the carry-over and the Gandhi campaign are partly responsible, the principle reason was the high relative cost of finished goods as compared with greys and whites. Mr. Ainscough strongly impresses upon Lancashire interests the imperative need for reduced finishing costs if they are to retain their valuable Indian trade in this branch.

The total production of cotton goods in the Indian mills advanced in the year by 9 per cent to 1,732 million yards. In the plain goods section, the greatest progress has been made in dhoties, which increased from 340 to 455 million yards. The production of shirtings and longcloths also advanced from 456 to 487 million yards. Both of these are well established Lancashire trades and fall within the area of competitions. The steady decline in the total production of Indian coloured goods during the past three years is attributed largely to change in fashion toward grey and bleached goods, as a result of the Gandhi agitation. Mr. Ainscough regards this as only a temporary phase, and says that all the tendencies point to a considerable extension of bleaching, dyeing, and even printing in India. Experts consider that there are no insuperable obstacles to the establishment of a calico printing industry.

Machinery and Mill Work.

The outstanding feature of the trade year was the prodigious import of machinery of all kinds. This item now takes third place in the import trade, being exceeded only by cotton textiles and sugar. Since the imports were much larger in value than during the post-Armistice boom, the figures are scarcely affected by uncleared stocks. The United Kingdom's share was 82.5, as compared with 90 per cent in the pre-war year. The United States' share advanced from 3 to 13 per cent; but in 1920–21 it was 17 per cent. Mr. Ainscough is able to report that the United Kingdom bids fair to get back her pre-war percentage in a few years' time, and is recovering lost ground in a remarkable way. Although American shipments have declined, United States competition is still serious in many branches, such as electrical plant, sawmilling and woodworking machinery, agricultural machinery, machine tools and industrial plants of all kinds. Further, by dint of active representation on the spot, the United States is obtaining a footing in very many lines which have hitherto been supplied by British makers.

The increase in the imports of German machinery last year (amounting to 1.5, as compared with 5.5 per cent before the war) consists principally of rice mills for Burma and a certain amount of oil-mill and sugar machinery. The great advantage to importers of the depreciated mark exchange during the early part of last year is now offset by rising prices and uncertain deliveries. Mr. Ainscough considers that the Indian market for machinery and plant of all kinds is likely to expand still further, with increasing importation of British machinery.

In iron and steel the year was most difficult for importers, as prices fell continuously. The outstanding feature was the recovery by the Continent of its position in the Indian steel trade. In railway plant and rolling stock, the United Kingdom well maintained her supremacy; but Mr. Ainscough shows that, with current expansion of demand, competition, both from Indian and Foreign sources, is likely to be much more serious in the future.

Arghan: The New Textile Material.

An interesting article is contributed to the *Textile Recorder* by Mr. Alfred S. Moore, on the newly developed textile material known as Arghan. The fibre owes its discovery not to any one connected directly with textiles. When Sir Henry Wickham, the pioneer of the plantation rubber industry, was exploring South America in search of further supplies of that valuable commodity, he came haphazard upon the arghan in its natural plant habitat. True, the natives were utilizing it for harness, belts, bags and other purposes, but their preparation was wasteful, and only in very limited quantities for their own domestic and other purposes.

As a plant it seems to belong to the Maguey or pineapple description, and though he collected specimens, their application did not occur to him until later. Our foreign dependence upon hemp was troubling Mr. Henry Wilson, Managing Director of the Belfast Ropework Co., Ltd.—the world's greatest rope and twine making concern—and arghan was submitted to him as a possible substitute. At once he discerned its potentialities in that line. It could be spun into twine, absolutely indurate to sea water ravages, and so strong that the twist given by the shop assistant when he had completed tying up his parcel was impossible to break it. In fact, it seemed too good to use merely as twine.

Arghan was then passed into the hands of spinning experts, and they further confirmed Mr. Wilson's opinions. It was found to be fully 50 per cent more tensile than best hemp or flax. Could it be woven into cloth? Only some minor loom adjustments were necessary, and the result was a magnificent firm cloth. In fact, it has been spun to 25 lea, and cloth has been woven from yarn of this number with great success.

But the problem was how to ensure ample supplies. Even apart from the crude, petty preparation and collection by the South American natives, the transport difficulties would have been nigh impossible. Moreover, it was desired that the commercial development of arghan should be on all-British lines. With that object then, an expedition was despatched to the South American wilds in winter, 1918, and a goodly supply of roots and suckers was transported to the Federated Malay States, where a nursery had been established. Indeed, the F.M.S. Government were so satisfied that they forthwith placed at the disposal of the Arghan promoters a tract of 30,000 acres, without any premium rent being exacted. And here the plants are in wholesale cultivation. In addition, too, the Indian and Ceylon Governments have set apart similar great areas for its cultivation.

Messrs. Bevan and Cross, the F.M.S. fibre experts, declared arghan unsurpassed in merits by any other fibre submitted to them. As a matter of fact its success has not belied one whit the declaration of Mr. Abraham Montefiore, Chairman of the Arghan Parent Company, who said that the more renowned the expert who had examined the arghan the more enthusiastic was his verdict.

Placed before Lancashire textile manufacturers they proved that it also bleached well, in addition to taking and retaining dye. Especially were the twine and rope making section gratified. So much so that they averred that they, as a body, would take all arghan offered for the making of nets, belting and other cordage. A leading British bleacher goes so far as to prophesy that if only this fibre can be produced at a lower cost than similar flaxen or hemp fabrics it must rival them in use.

One great virtue is that there is no need for the tedious preparation essential in hemp, flax and ramie. The leaves simply split up into long, silky fibres, up to seven feet long, of pearly white colour.

Views and Comments.

BY "ECONOMICUS".

The Report on the Madras Wages Census of 1921, prepared by the Madras Labour Office and published recently as a G. O. by the Madras Government—a quinquennial performance turned into an annual one at the instance of the Government of India—contains the average, maximum and minimum daily wages of the following order collected *talukwar*:—(1) of artisans (blacksmiths and carpenters); (2) of agricultural labourers (ploughmen, sowers and transplanters of paddy, weeders, reapers and others, both men and women); and (3) of urban workers including carpenters, blacksmiths, masons, bricklayers, coolies, sweepers, Bhistis (water-carriers), Malis (gardeners) and syces. We are not in a position to question the accuracy of the figures paraded in 16 pages of foolscap, for in matters of this kind one has to depend on the information collected by men on the spot who happen to be in this case the Revenue Inspectors of the several firkas in the Presidency, but one has to complain that the Labour Commissioner's Report, appended presumably to explain those figures—to give life in fact to the otherwise uninteresting and hideous array of skeletons in the shape of statistics—has not succeeded in helping the uninitiated reader to find his way. The Commissioner, for instance, should have told his readers that (1) the classification of agricultural labourers into ploughmen, sowers and transplanters, weeders and reapers is not a hard and fast one, but ploughing, sowing, etc., are merely agricultural operations in which most of the agricultural labourers engage themselves in the different seasons of the year; (2) that the average daily wages are not earned throughout the year, but only for a few days; (3) that piece-rates preponderate in some occupations and (4) that to group together sowers and transplanters into one group is not true to facts in all cases, for sowers are often men and paid a different rate of wages and transplanters are often women (this is especially the case in Malabar with whose conditions we are familiar). We are not told either how the Commissioner arrived at the average rate of wages. Again, in the column on advance paid to permanent farm servants we are not informed whether such advances take the form of money as one infers from the figures or in kind also. A minor matter—but still of some importance— we do not see any reference made to the semi-permanent farm servants of Malabar, the Pulayas and Cherumas who form the backbone of agricultural work in several Taluks; they—men, women and youngsters—are often kept on for the year on a daily rate of wages in kind with some perquisites on certain auspicious occasions in the year which are well known in the countryside. Moreover, a wages census without at the same time giving side by side the cost of living index in the different Taluks for which the wages are entered, is worse than useless for purposes of comparison. We hope that in the census for 1922 the Commissioner will be able to give some details on these points. A casual reader will also be interested to have a short statement of wages of manageable limit in which are given the average wages of workers in the half-a-dozen well-defined homogeneous economic circles into which the Madras Presidency can be divided instead of having to wade through the figures for the 25 Districts and about 200 Taluks that are embodied in the statements of the present Report.

* * *

We give the following portions from the above Report for the information of our readers:—"As compared with the Census of 1916, the wages of blacksmiths and carpenters have generally risen. There has been a general rise in the maximum and minimum wages of blacksmiths, a fall in the maximum being observed in the districts of Krishna, Guntur, Anantapur and a slight fall in the minimum wages of Anantapur. The minimum wages rose from 4 annas to 8 annas in Nellore, from 6 annas to 12 annas in Cuddapah and from 4 annas to 12 annas in Salem and the maximum wages rose from Re. 1 to Rs. 1—8—0 in Coimbatore and Trichinopoly. The wages of carpenters also rose generally, a slight fall in the maximum being observed in the district of Godavari and a fall in the minimum in the districts of Tanjore, Chingleput and Bellary. The maximum wages rose in particular from Re. 1 to Rs. 2 in the Kurnool district." As regards

agricultural labour, though comparison is difficult owing to a different classification the Commissioner writes that "a rough comparison of the wages of 1916 with those of 1921 shows that there was a general rise in both maximum and minimum wages, especially in the maximum wages in the districts of Ganjam, Kurnool, Nellore, Chingleput, Salem and Tinnevelly. No rise is however noticed in the minimum wages of Ganjam, Chingleput and South Arcot." In noting these variations in rates from period to period, it should not be difficult for the inquirer to suggest some of the probable causes which the Commissioner might check by his personal inquiries on the spot. We need hardly emphasize the fact that the barometer of wages-variation, other things being equal, is a sufficient indication of the conditions of labour, its status as well as its supply. As regards urban workers the method of collecting information was to instruct the municipal authorities to collect the statistics. Though comparison with previous figures is impossible because of a change in classification, the Report suggests that wages generally are higher in the Southern and Western than in the Northern towns. Berhampur and Bimlipatam still pay only 4 annas for an unskilled labourer; Madras City is by no means the highest in rank.

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Mr. G. R. Clarke, C. S. I., Director-General of Posts and Telegraphs in India, in a paper read before the Royal Society of Arts in London is reported to have said:—"Cheap postage is such an inestimable advantage to the life of a country, both on its social and business side, that the actual loss in maintaining the service may be more than counterbalanced by the general gain to the community. It has been found by experience that high postage seriously interferes with the distribution of business and trade circulars, and it is possible that in this way the gain of a million pounds say to postal revenue may mean the loss of 10 million pounds worth of trade orders." Our readers may remember that we expressed the same view in these columns at the time the postal charges in India were increased. Holding as he does the above opinion it passes our understanding why Mr. Clarke supported and even justified the recent increase in our postal rates on the ground, to use his own words which were published in the April issue of this *Journal* (page 123), that "the postal authorities cannot possibly undertake to carry any article from one end of India to the other for a quarter of an anna and the articles like postcards, which have to be cleared from letter boxes and carried long distances by road and rail for delivery to addressees, cost to the Post Office considerably more than a quarter anna postage can cover." But the Post Office has counted without its host, as the proverb says. The consumer's psychology is such that where a half anna envelope was used previously a post card now suffices, and in place of four quarter anna cards he is usually satisfied with one half anna card. No, we find it difficult to justify the present increase either from the point of view of postal finances or the convenience of the public.

* * *

We are pleased to note that the Government of India has issued (May, 15) a lengthy communique regarding stores purchase. After admitting the justice of the Indian claims in this regard, the Government goes on to admit that the policy in the past was prejudicial to Indian interests, but explains that it was due to lack of proper organization on the spot to control such business and that this is being rapidly remedied. Let us hope that the Government will bury its commercial instincts and stand by Indian interests in a truly "national" spirit and look to Indian interests first, second and last.

* * *

In Switzerland the proposal for the taxation of capital is going to be submitted to a referendum taking place in December next. It is estimated that as a result 100,000,000 Swiss francs have already left the country this week for England and America. The result has been an unsettling of exchange. If the referendum supports the proposal, then the Swiss banks will be obliged to declare all moneys, securities, etc., belonging to their clients to the authorities for taxation. Alarm has been sounded by the Swiss press at the rate capital is leaving the country, but people with large fortunes are, as the *European Press*, Munich, reports, taking no risks, and are buying British pounds as fast as they can realize their Swiss securities. Many are purchasing five per cent War Stock or other British or Dominion gilt-edged securities. No wonder the labour proposal for a capital levy has alarmed British capital. The real danger, if danger it is, lies in the fact that the British labour party seems well on the way to bring it within the range of practical politics.

Industrial Notes from the United States.

By Alfred T. Marks.

INDIA—WORLD'S SECOND COUNTRY IN COTTON PRODUCTION.

Washington, D.C., U.S.A., April 30, 1923.—The United States Department of Commerce, in a report just issued, states that in the calendar year 1922 the world's production of cotton totalled 18,300,000 bales of 478 pounds each. These were sub-divided chiefly among the following producing countries in the order named: United States, India, Egypt, Mexico. Referring specifically to India's Cotton production in the year 1922—which was 4,348,000 bales as against 3,735,000 bales in 1921—the department's report says that India, in 1921, had an acreage in cotton of 11,976,000, while in the year 1922 it had increased its acreage devoted to this staple to 12,496,000.

The report gives an interesting resume of cotton production for the last ten years, as follows:—

	United States bales	India bales
1913 ..	13,033,000	3,584,000
1914 ..	16,135,000	4,356,000
1915 ..	11,192,000	3,126,000
1916 ..	11,450,000	3,756,000
1917 ..	11,302,000	3,390,000
1918 ..	12,041,000	3,324,000
1919 ..	11,421,000	4,850,000
1920 ..	13,440,000	3,013,000
1921 ..	7,954,000	3,735,000
1922 ..	9,964,000	4,348,000

HELPING THE FARMER WITH MOTION PICTURES.

Both industrially and agriculturally motion pictures are being made to serve a good useful purpose throughout various sections of the United States, and if plans now under consideration are carried out, their usefulness will be still more pronounced in the next few years.

The department officials find that, when used in combination with other methods of presenting ideas for profitable and up-to-date farming, such as the department's printed bulletins, newspaper publicity, exhibits, the spoken word, lantern slides, etc., constitute a valuable addition to these extension agencies. The department finds and has proved over and over that the results of *showing* as compared with *telling* are far more advantageous to the farmer. Incidentally, it may be stated that the field of application for the motion pictures has been widened to embrace both industry and commerce, and in the instruction of workers along any particular line of effort the pictures are far more successful than are the printed rules.

So successful, indeed, have the pictures become in the operations of the Department of Agriculture and its various branches and bureaus that the department now maintains its own motion picture laboratory, where the films are prepared to picturize the most modern and successful agricultural practices, to warn of the dangerous practices or conditions and undesirable methods, and otherwise to acquaint those at a distance from the national capital with the work of the department's various bureaus and branches and their application to practical farm life.

In connection with "extension work"—that is, backing up and explaining matters presented to the farmers by other methods—the motion pictures have many advantages and few disadvantages. Some of the chief advantages are that they create an interest in and demand for farm demonstrations; they can cover a long period of time in a few seconds, showing the beginning of an operation, its progress and its completion. Farmers in distant countries can see in motion pictures farm demonstrations which they could not possibly visit. Improved ways of handling familiar jobs, including household tasks, can be effectively shown by the pictures.

Thus are the motion pictures making a place for themselves outside of the field of entertainment—and it is predicted that within the next five years the industrial and commercial uses of the pictures will equal if not surpass in extent their use as an amusement or entertainment.

NEW HEATING ELEMENT FOR INDUSTRIAL APPLICATION.

There has just been introduced in the United States an interesting and ingeniously-contrived element for heating. Consisting of a ribbon wound on a number of fire-clay bushings assembled on two steel tie rods between two pressed steel end-plates, the new heating element offers a ready means of converting any oven for any purpose into an electric oven, suitable for many uses but particularly adaptable for such work as baking and drying, in enamelling and japanning operations.

The ends of the ribbon are secured to drop-forged steel terminals which are clamped to the steel rods mentioned above, the rods thereby becoming the terminals of the heaters. These

rods are insulated from the end frames through which they pass, and the ends are threaded for bolting on the connectors. Cold-rolled steel bus-bars are recommended and may be mounted directly above the heater on insulators bolted directly to the end frames. Hooks are used for hanging the heaters on to the usual supporting steel work, which may be flat iron if desired, angle or channel iron or pipe work. Protecting screens may be attached directly to the end-plates. There is thus secured a very inexpensive electric oven for many purposes with the use of the arrangement suggested in connection with any oven.

Phonograph Reproducer from a Telephone Receiver.

An experienced talking machine manufacturer, who has spent many years in the phonograph producing trade, says that an old telephone receiver can be readily converted into a first-class phonograph reproducer with little work and expense. The receiver is sawed off about one-half inch back of the threaded male end, and the cap or ear-piece is unscrewed and removed. A metal plate of the same diameter as the severed end is provided and drilled at the centre with a hole one-half or one inch in diameter. Over this hole a small tube to fit the goose-neck of the phonograph is attached with small rivets or solder. Several small holes are drilled around the outer edge of the plate, and corresponding holes are drilled into the rubber for attaching the plate with small screws. Now cut out the bevelled opening in the cap to at least one inch in diameter, substituting for metal diaphragm one made from a sheet of mica or thin cardboard.

The needle arm is made from a piece of stiff, light metal, such as German silver, and should be long enough so that when bent at right angles the upper leg will touch the centre and the lower end will extend beyond, and clear off all parts of the cap. Split the upper leg and spread it out to form a flat base. Solder the lower end of the bar to a piece of round rod, drilled through the centre to receive the needle. A small screw is placed at the side to hold the needle. Place a small rubber washer on each side of the needle arm and secure it to the bearings. Be sure the needle bar has play on its bearings, but is not loose or does not rattle.

American "Big Business" has made a Discovery.

It is noted that one of the most important business phenomena which have developed all through the United States in the last few years, and yet one of the least commented on, is the marked effort on the part of leaders in many branches of industry and commerce to establish their organizations and their customers a cordial relationship which will have the effect of ironing out petty differences without leaving a wrinkle to turn up later and cause a sore spot.

It is almost as though these leaders had noted the difference in results obtained by two types of adjustment bureaus. Of these, one is the machine-made, personal transaction which adjusts the immediate difficulty, and then stops short. The other involves a considerable employment of knowledge and of concessions to the little foibles, fancies and vanities of human nature. The same material adjustment is made—but more important is the mental adjustment which makes the complainant thoroughly satisfied *inside*.

An instance the writer has in mind which will illustrate this is the attitude of the United Shoe Machinery Corporation, one of the world's greatest corporations. When recently it was under the necessity of negotiating new forms of leases with foot-wear manufacturers, the president called together the representatives of the many thousands of lessees of its machinery throughout the world, and said: "Well, gentlemen, what do you want?" That started negotiations off with an atmosphere of "give and take" that brought them to a successful and happy conclusion.

The fact that so-called big business has thought it worth while to get under the skin of its customers might be accepted as an evidence of its own foresight, since what these great business organizations now are doing is but following in the path blazed by the retailers everywhere when they adopted the rule that "the customer be pleased" and that "the customer is always right."

"Standardization," the Big Industrial Development.

One of the most interesting and important recent developments in industrial America is "standardization," which is another name for simplification of varieties in manufacture. This is gradually, but rapidly, extending throughout American industry, as shown in a survey of the last twelve months' development just completed by the Fabricated Production Department of the Chamber of Commerce of the United States, the largest trade and commercial body in the country.

"The appeal for economies and greater

efficiency in production has developed action which is bringing substantial results," it is declared by the Chamber. "That the policy is sound and practicable is attested by reviewing some of the many benefits and economies accruing from simplification and standardization."

"There is no danger," says the Fabricated Production Department, "of creating a standardized world and tramping out all individualism in manufacture. There undoubtedly will always be a number of commodities not amenable to simplification and standardization, but they are a very small percentage of the whole."

Summarizing expressions from manufacturers as to what already has been accomplished in reducing wasteful varieties, the Chamber says that automobile tire makers reported having invested "$7,000,000 in simplification;" pipe and fitting manufacturers made a reduction of active lines to 610 items from 17,000 items; paper makers reported their output down to approximately 55 per cent of former lines with "increased production at lower cost from each of our mills"; the shoe industry is enabled "to make more shoes per operator at a lower cost than we even anticipated"; makers of rubber products have cut 145 articles to 29 "and do a larger business"; farm implements simplification is meeting "developments which are likely to prove most revolutionary," with advantages to distributors as well as manufacturers; store fixtures business has "grown twenty-fold since we adopted simplification." These are reports selected at random from hundreds of American industries, and all of the same tenor.

The methods by which simplification or standardization has been developed include individual efforts, through trade and commercial organizations, co-operative effort in unorganized lines and by law, and all show "striking examples of success," the Chamber states.

In summarizing the work of the Fabricated Production Department of the Chamber, its manager says: "Thus far, in placing the matter of standardization before our 1800 organizations, with an underlying membership of over 750,000, firms and individuals, the Chamber of Commerce of the United States represents the industry and commerce of the country. Active contact has been had with more than 340 separate and distinct industries and a wealth of information and experience has been developed. The department is co-operating and assisting in bringing about the desired simplification in almost every field of industry in the country."

On Cooling Systems for Automobiles.

Owners of automobiles everywhere will be interested in the statement of one of America's greatest motor manufacturers on the subject of motor cooling systems. As is well known, burning gasoline produces a very high temperature, higher than that at which the engine can be successfully operated. The temperature of the burning mixture in the cylinder is approximately 3,000 degrees F. Cast iron melts at approximately 2,000 degrees and lubricating oil, a film of which must be maintained between the piston and cylinder wall in order to have the pistons operate freely, burns at 600 degrees. The manufacturer explains that to keep the parts sufficiently cool so that the engine will function it is necessary to absorb some of this heat.

"There are two methods used," he says, "the air cooling system and the water cooling system. In the former projections are built or placed on the outside of the cylinders so as to present a large surface for the air which is caused to circulate over them to act upon. The air is circulated by means of a fan so arranged that it will either force or draw the air around the cylinders. Practically no water is used. But in the water cooling system, which the great majority of cars have, the cylinder is cast with a hollow space between the inner and outer walls in which water is circulated for the purpose of carrying off the excess heat. There are two types of water cooling systems, the thermo-siphon and the forced circulation."

The census returns of the Counties which are gradually being completed show the remarkable fact that whereas, according to the recent general census of the whole of England and Wales, women are in a majority of 9.5 per cent, they are in a minority in many places, notably in the Counties of Durham, Lincolnshire, Monmouth, Brecknock and Glamorgan. In only 7 out of 81 county boroughs do the males exceed the females, but the proportion of males to females is much higher in urban and rural districts. The Assistant Registrar-General is of opinion that the reason for an excess of males in any district is purely economic or due to such matters as the presence of a military station or a large boys' school, while males generally predominate in mining districts and purely agricultural areas.

Canadian Trade and Finance.

World Economic Conditions.

Montreal, May 1st, 1923.—An impressive feature which a worldwide survey of economic conditions discloses is the contrast which exists in the business conditions of the various countries. An effort to picture the whole situation would involve a study in extremes —a striking variation from conditions of marked prosperity on the one hand, to deep depression on the other. At the one extreme is the business revival which the United States is enjoying and which along certain industrial and commercial lines approximates boom conditions. From all sections of the country come reports of improving business. Despite the fact that manufacturing plants are operating on a capacity basis in nearly all industries, the demand for certain products is so great that deliveries are falling behind. Labour costs are advancing along with other prices, and labour shortages are not rare. The United States Steel Corporation has recently advanced wages of common labour from 36 cents to 40 cents an hour despite an increase of 20 per cent last fall. Wages in the building trades are approaching the peak of 1920, yet in spite of this, keen building activity exists. In practically all branches of industry, with few exceptions, the situation is similar. According to figures recently published by the Chase National Bank of New York, the output of pig iron increased approximately 275 per cent from July 1921 to February 1923. The production of automobiles has increased 240 per cent since December 1921. According to Bradstreet's Index Number of prices there has been an increase of 31 per cent in the general price level since June 1921. Since the beginning of the year, the stock market has remained particularly buoyant. Retail business is reported as excellent and wholesalers, for the most part, are placing orders for many months ahead.

This striking recovery in industrial activity and business naturally suggests a brief survey of conditions precedent to the present movement. During the period of depression which existed through the summer of 1921, the process of liquidation was drastic, and a period of greatly reduced business substantially lowered production costs. Accumulated stocks of goods were gradually sold at lower prices and forward buying and speculation were cut to a minimum. In the latter part of 1921 and the early months of 1922 production fell off to such an extent that surplus stocks were largely used up. The slate was thus cleared, and early in 1922 the upswing of business in some lines began, but did not become general until the fall of 1922. The present activity is perhaps based primarily on the necessity of catching upon the shortages in building and certain other lines in which war demand caused postponement of current needs. The depression previously referred to rendered liquid a large part of the enormous increase in wealth resulting from the war and furnished the means to finance further development, while the increased tariff tended to shut out foreign competition in this most important market. It is timely to consider what will be the probable duration of the present upswing. In this regard, opinion in the United States is rather definitely divided. Despite the shortage of supplies which exists in many lines and the high degree of purchasing power of the American people, one hears, here and there, a note of caution lest the period of expansion may soon spend itself, preceding a turn in business. In fact there is some similarity between the present situation and that prior to the slump of 1921. As previously mentioned, the costs of labour and of materials are rising substantially, although this rise is not yet relatively apparent in general retail prices, and its cumulative effect may have a very decided influence towards limiting consumption. How important this factor is could be determined only by an exhaustive analysis of the entire situation. The fact that orders are still increasing should not be over-estimated in an attempt to forecast the future, since such a situation always exists in a similar upswing, and a wholesale cancellation of orders usually follows when the reaction sets in. As we shall attempt to show later, foreign demand, speaking generally, cannot be depended on to continue in even normal proportions. However, it is reasonable to expect a gradual improvement in the agricultural industry which has lagged behind other lines of business, and the other features of the situation referred to above are of such strength as to lead to the view that a continuation of existing conditions may be expected for a considerably longer period, but by no means indefinitely unless the general world situation greatly improves.

Conditions in Canada.

A survey of conditions in Canada readily discloses the fact that the Dominion is not enjoying any such prosperity as has been outlined above with reference to the United States. The earlier months of the year brought forecasts of coming improvement, but this improvement is rather more delayed than was anticipated. Retail buying has been disappointing for the most part in all sections of the country, and this naturally has been reflected in wholesale orders. Prices of agricultural products have been unusually low for some time and little improvement has as yet taken place. Lumber operations, during the winter and early spring, were interfered with by the lateness of the spring.

Why is Canada not experiencing the prosperity which exists in the United States ? In the first place, if the business activity, during the war period, resulted in a net increase in the wealth of the nation, such an increase bears no proportion to the financial benefits realized by the United States. Canada is dependent to a proportionately greater extent on agriculture than is our neighbour to the south. Further, the movements of the business cycle are never so pronounced or violent as in the United States, and relative movements in Canada, usually occur after an interval, averaging probably six months. There is undoubted evidence of a revival of industrial activity in practically all lines. Our export trade continues to improve, and, it is interesting to note that on a per capita basis it was three times as great as that of the United States during the last calendar year. Recently substantial orders for steel and other products have been received by certain Canadian manufacturers from buyers in the United States at prices higher than those ruling in Canada, a situation created no doubt by the difficulty of obtaining prompt deliveries at home. The pulp and paper industry continues to be very active, and the large stocks of lumber, which were on hand a year ago have been cleaned up at steadily advancing prices. There is, we think, some indication of an improvement in agricultural conditions, due not only to a tendency to increased prices, but also to a better adjustment of operating costs to actual conditions. While better business conditions in the United States have tended to some extent to attract skilled labourers from Canada, there is evidence that important immigration from Europe will take place during the coming summer. A comparison of conditions in Canada with those which obtained in the United States a few months ago seems to justify the belief that the degree of improvement which has already commenced will gradually increase and that Canada will experience a business activity, comparable at least, to that which now exists in the United States. Such a movement would not necessarily be dependent upon the continuance of the upswing in the United States.

In press and parliament much emphasis has been laid in recent months on the difficulties which confront us, and it is not wise that we should under-estimate such difficulties. Our taxes, increased since the pre-war period by large deficits arising out of Government operation of railways, service of war debt, pensions, etc., are undoubtedly burdensome, but it is possible to over-emphasize our troubles. As indicated above, we believe that business prospects are encouraging. What is most necessary, in order that we may take advantage of our opportunities, is that public expenditures, municipal, provincial and federal, should be curtailed, thereby rendering possible reductions in taxation and particularly in company and personal income taxation which is so discouraging to enterprise. Given thrift, hard work and enthusiasm on the part of our citizens, there is no room for pessimism either in the existing situation or in our future prospects.

Position in Great Britain.

When we consider conditions in Great Britain, we are faced with a state of depression which stands out in striking contrast with conditions which we have portrayed as existing in the United States. The opening months of the year have been disappointing. When the new year dawned, hope for an improvement in general conditions throughout Europe, seemed justified, but the first quarter ended with the skies as full of uncertainty and unrest as ever, and the forecast of accelerated economic progress proved premature. Although there has been a slight reduction in the number of unemployed, the problem is still a very serious one. The percentage of unemployed among the trade unions reporting was 13.1 at the beginning of March as compared with 13.7 a month earlier and 16.3 at the beginning of March last year. The total number of labourers registered as unemployed at the employment exchanges on the 19th of March in Great Britain and Northern Ireland was approximately 1,260,500. The situation is further complicated by labour disputes in many important industries. There is serious

discontent, for example, among the coal miners in South Wales. The strike of the farm labourers in Norfolk is still proceeding and trouble is threatened in the potteries and other industries. Manufacturing industries, with few exceptions, are operating much below capacity. The price of fuel has reached high levels on account of the shortage of coke which is a consequence of continued demand from the continent. The uncertainty of continental trade, involving the cancellation of a large number of orders has handicapped business considerably.

But the horizon is not without encouraging signs. On account of the conditions to which we have referred in the coal industries of the Continent, the production of coal in Great Britain continues to exceed pre-war levels. Coal prices are up about 3 per ton, and metallurgical coke prices are above normal. A period of business depression necessarily results in decreased production costs and with Germany eliminated as a serious competitor in international markets, Great Britain is steadily improving her ability to undersell her trade rivals. This situation is undoubtedly being accentuated by constantly increasing costs within the United States, her most serious competitor. There seems to be strong evidence to support the belief that the United Kingdom has passed through the most severe stage of depression, and has already begun to emerge. She is gradually recapturing and enlarging her pre-war markets and there can be no reasonable doubt of her early re-establishment to her pre-war dominance in international trade. No better evidence of the courage and determination with which her difficulties are being met and solved can be given than a reference to the current budget. Instead of an anticipated surplus of some £7,000,000, the year closed with a surplus of more than £100,000,000. The revenue raised during the year amounted to over £774,933,000 which involved taxation amounting to almost £18 per capita, a burden much greater than has ever been borne by any nation. The existence of a surplus during the past year, and an anticipated surplus of some proportions for the coming year has warranted certain reductions in taxation. The reductions comprise a 50 per cent lowering of the corporation profits tax of 5 per cent, a reduction of 6*d.* per pound on the Income Tax and a penny per pint on the beer tax. Taking into consideration the unsatisfactory state of trade and the unemployment which existed, the effort put forth is beyond praise and must challenge the admiration of the whole world.

When Shall We Resume Gold Payments?

Last fall when the Canadian dollar was quoted at a slight premium in terms of United States dollars, considerable speculation was indulged in as to whether the Government could properly resume gold payments, and if so, whether it would be advisable to do so. Since then Canadian funds have been quoted at a discount in New York ranging during recent months between 1½ and 2 per cent. It is evident that until we definitely resume gold payments, in other words, until the Government removes restrictions on the movement of gold and again makes Dominion notes redeemable on demand in gold, there will always be the probability of a more or less substantial premium on New York funds. Improvement in our foreign trade situation and borrowings abroad may, at times, result in quotations for Canadian funds of par or even at a premium within the cost of moving gold to Canada, which movement actually took place in considerable volume last fall, but the tendency under existing conditions must always be towards a discount on the Canadian dollar.

Our general financial situation should now be regarded as normal. From the point of view of Government finances, it is much less favourable, it is true, than prior to 1914, but we have passed the stage where government or private business is affected by conditions incident to the war, except those which must continue more or less indefinitely, and have reached a point which might be described as our new normal—a position which can be improved only gradually by enterprise and thrift and increased population. Since then, our present situation is one which we must expect to continue, it is timely to consider the practicability and desirability of resuming gold payments.

First let us examine our stock of gold as compared with the position prior to the war. On June 30, 1914, Dominion notes outstanding amounted to $114,182,098 against which gold was held to the extent of $92,663,575 leaving a balance uncovered by specie of $21,518,523. At the end of February 1923, the stock of gold held for redemption of Dominion notes amounted to $133,047,003.97 against notes outstanding of $246,860,680.42 showing a balance uncovered by gold of $113,813,676.45. This

compares with $196,478,100 outstanding Dominion notes uncovered by gold on June 30, 1920. In comparing the present situation with pre-war conditions, we must take into consideration the effect of the Finance Act of 1914, which enabled the Government to make advances of Dominion notes against the deposit of approved securities. Such advances on February 28, 1923, amounted to $84,143,050.33. It would be incorrect to say that notes represented by such advances can be dismissed from our calculations in considering the loss of gold which might possibly occur if free movement of gold were permitted, but the position of this proportion of the government circulation is obviously different from that portion of the issue uncovered by either gold or security other than government credit, for the reason that such advances are of a self-liquidating character.

These figures indicate that the position of the government note circulation is sound and that without further preparation gold payments might immediately be resumed with the assurance that no important loss of the government stock of gold would take place. It may well be asked what drain on our stock of gold can be expected if gold payments are resumed. We think the redundancy of our circulation, as compared with the circulation of the United States, may be measured by the premium on New York funds. The total circulation of the Government and banks in Canada as at February 28th was approximately $400,000,000. Therefore to reduce New York funds to par would seem to require a gold movement to the extent of $8/10,000,000 only. It is, however, not advisable to be dogmatic on this question. There are a number of considerations which might effect the matter and it should not be overlooked that the chartered banks are themselves holders of gold to a considerable extent. The amount held in Canada of gold and subsidiary coins as at February 28, 1923, was just under $62,000,000, to which must be added $9,500,000 of gold coin deposited with the Central Gold Reserve as security for excess circulation. It is quite possible that the movement of gold, if any, which might occur, would be supplied exclusively from these sources.

A careful consideration of all aspects of the situation will, we think, demonstrate clearly that no contingency need be anticipated which would seriously deplete our stock of gold or in any way lead to embarrassment, nor need we anticipate difficulty for the future, barring some such extraordinary conditions as those produced by the war. In the United States money is comparatively easy and likely to continue so, and our credit is high in that market. Great Britain has recently shown renewed interest in our securities and only the continued discount on the pound sterling in Canada prevents development of an active market. Rates of interest in London are very low, and it is the general opinion that the time is not far distant when the pound sterling will again be quoted at par in terms of gold. We believe, therefore, as already intimated, that there can be no doubt of our ability to resume and maintain gold payments without any undue strain on our resources or credit, and if we assume that this is so, there can be no doubt of the advisability of doing so.

It is well known that United States banks, corporations and individuals, during the war period and after, carried deposits in Canadian banks running into many millions of dollars awaiting the return of Canadian exchange to par. When this occurred last fall such balances were promptly withdrawn and it is safe to say will not again be allowed to resume even normal proportions until some assurance can be given that there is no risk of an exchange loss. A certainty that Canadian funds could always be reckoned as equal to United States funds would gradually facilitate business and remove many present annoyances in transactions with our neighbours to the south. Many other considerations might be urged for a complete stabilization of our financial relations with the United States, which the limits of an article of this character do not allow us to examine. The matter is one which might well engage the early attention of the Government. It should add greatly to our financial prestige and credit if we were the first of all countries, belligerent and others, excepting only the United States, to return to the gold standard without restrictions.

Topics in the Journals.

(1) *Royal Society of Arts, 11th May* 1923.—Industrial Arbitration by Sir William Mackenzie, K.B.E., K.C.

(2) *International Review of Agricultural Economics, January—March* 1923.—The Principal Types of Agricultural Co-operative Societies in Italy by G. Gostanzo.

(3) *The Journal of the Ministry of Agriculture, May* 1923.—Agricultural Policy of the Government.

Selling American Goods in British India.*

By C. C. Batchelder, American Trade Commissioner.

Introduction.

Business methods in India differ in certain important respects from those of other countries. In Europe and most other countries in which occidental civilization prevails the wholesaling, distributing, retailing, and, in some instances, the importing trade also is largely in the hands of business men born in the country, whose interests are identified with it and who form part of an organized distributing system, which functions in a regular manner without much assistance from foreigners.

In China and certain other oriental countries the import trade is carried on to a considerable extent by British, American, and other European concerns, usually of considerable wealth and business standing, many of which have been established for years in the principal ports and have branches or correspondents in other places. Few Chinese merchants buy direct from foreign manufacturers, although the number who do so is growing. The American who wishes to sell goods in China can usually find buyers or can select an agent among these American or European concerns, and can deal according to the methods which have been generally adopted in the international export and import trade.

In India, however, there are relatively few American general importing and exporting concerns, which either buy outright, sell on commission, or act as agents; and very often these concerns have made exclusive agency arrangements or have regular sources of supply for the goods they need, and therefore are not inclined to form new business connections. Most American concerns in India are branches of large corporations in the United States (or are closely allied with them) which devote themselves exclusively to the sale of their own specialities, such as kerosene and lubricating oils, typewriters, sewing machines, certain lines of iron and steel, and patented articles, and are not in a position to handle textiles, hardware, or miscellaneous articles.

British and other European houses naturally prefer goods from their own countries and have bought from certain manufacturers for many years. Often they have exclusive agencies and are usually not inclined to experiment with American goods or to conform to American business methods. They regard Americans not only as competitors but as poachers on their commercial preserves, and often do not want to handle American goods or to act as agents for Americans, feeling that as soon as they have built up a desirable trade with much effort, the American manufacturers will dispense with their services and sell the market direct.

American methods of doing business and carrying on correspondence do not appeal to British merchants. They regard the "pep" and brevity in our letters as bad manners. The aggressiveness and "push", which are desirable in salesmen in the United States, are repellant here, and business is often lost by want of skill in correspondence, when both goods and prices are satisfactory.

In view of the unwillingness of the British merchants to see Americans enter the Indian market as business competitors in many lines, their disinclination to assist them, and the scarcity of American concerns selling in India is rather difficult. However, American products during the war were liked by consumers in India, and Indian merchants are very anxious to trade direct with the United States instead of buying through England and Germany, as has been done in the past.

There are considerable numbers of Indian merchants of unquestioned business integrity and financial standing who are always ready either to buy American goods outright or to handle them on a commission or agency basis, and American concerns which cannot make satisfactory arrangements with American or European houses in India can often do a profitable business with Indians.

India offers promising field for American Trade.

India suffered very little during the war, and considerable wealth accumulated in the hands of the commercial classes, which has been invested to a considerable extent in industrial enterprises. The total stock and bond paid-up capital of companies incorporated in British India, Mysore, Baroda, and Travancore is 2,485,994,192 rupees (at normal exchange the rupee is worth 32 cents). Among these industries are jute and cotton mills,

*Extract from U. S. A. Commercial Reports—Supplement dated April 9, 1923 (Trade Information Bulletin No. 85).

iron and steel plants, engineering works, and a countless variety of other plants, which require constant supplies of machinery, tools, and other articles, many of which are made in the United States. For example, in 1920 there were 253 cotton mills operating in India, with 6,763,076 spindles and 119,012 looms, employing 311,078 hands and consuming annually 1,952,318 bales of cotton of 392 pounds each.

According to the census of 1921, there were 319,075,132 people in India. The total imports of all kinds for the year 1921–22 amounted to 3,117,112,374 rupees, while the exports totalled 2,677,259,350 rupees. The earning power, wants, and trade of British India are likely to increase rapidly, and it would seem profitable for American manufacturers and exporters to study the trade statistics with care, in order to decide whether existing business can be increased or new outlets opened for their products.

Due consideration should be paid to the fact that British merchants have, for many years, trained the larger Indian merchants in the use of the English language and business methods, so that there is no formidable language bar, as in many other countries. There is security for life and property. There is no great inflation of the currency; the paper currency continued to be redeemed in silver even during the war. Capital is relatively abundant. Political conditions are not such as to cause apprehension in financial and commercial circles, as the Gandhi movement, which for some time caused widespread unrest, seems to be subsiding.

It is rather astonishing that American manufacturers have neglected this promising field, especially in view of the success which has attended those who have exploited it intelligently. This failure to take advantage of our opportunities is perhaps due to the lack of information which exists about India; to the use of unsuitable selling methods; and to the feeling that, as India is a British colony, it is a British commercial preserve.

This is far from being the case, for the Germans and Japanese have cut deeply into British trade in India. Customs duties are the same for all nations, with the exception of the 15 per cent preferential export duty on hides and skins. Of course, cotton textiles constitute a large share of the imports (569,380,548 rupees in 1921–22), and it may not be possible for the United States to compete with Great Britain and Japan in many items but there are various lines in which the United States is already successful and in which American business could be increased by merchandising methods better adapted to the country.

The Complexity of Indian Markets.

It is quite natural to think of India as a relatively small homogeneous country like those of western Europe or Japan, but in reality it is a huge peninsula containing 1,802,657 square miles (about equal to the whole of Europe except Russia), while China proper has only 1,532,420 square miles and continental United States has 2,973,890 square miles. India has 319,075,132 inhabitants (China proper has about 302,110,000 and the United States has 105,683,108) living in 11 practically autonomous British-ruled Provinces and in 675 more or less independent Native States, varying from Hyderabad, which is as large as Italy, to some with only 19 square miles.

The principal States in which foreigners are likely to be interested are Hyderabad, Mysore, Baroda, Gwalior, Kashmir, Indore, Bhopal, Jaipur, Bikanir, Jodhpur, and Patiala. Mysore, Baroda, and Gwalior are well known for their industrial progress and intelligent administrations. Their Governments buy largely for the railroads, hydro-electric plants, and other industrial enterprises in which they are financially interested.

The inhabitants of India belong to at least 10 distinct races (with marked characteristics which distinguish one from another) and profess nine principal religions, which profoundly influence their method of living. For instance, Buddhists, Jains, and most high-caste Hindus do not eat meat; and the Hindus are divided into four principal castes (in addition to the pariahs, or outcasts), which in turn are subdivided into about 2,000 minor castes, based upon heredity or occupation. These differences of race, religion, language, and caste all produce an infinite diversity of manners and customs, which manifests itself in housing, dress, food, furniture, and in domestic, social, and business requirements, and necessitates the purchase of a multiplicity of articles, varying in material, colour, shape, and pattern. The shops of India as a whole, therefore, require a greater number of articles than are used in an occidental civilization, where habits of dress and living are more standardized and afford less scope for the preferences of the individual.

The goods which suit one district cannot be sold in another, and reasoning from analogy is almost always misleading. It is necessary to know conditions.

Fortunately there are very many staple articles in textiles and metals which are widely used, while the different regions are very constant in their requirements, so that the problem of supplying the Indian markets is not so difficult as it might appear, although carelessness and ignorance often cause expensive mistakes, such as shipping shoes of sizes and shapes suited only to Europeans to districts inhabited almost exclusively by natives with smaller and more slender feet.

Not only numerous British merchants, but Americans, Germans, Japanese, Greeks, Chinese, and those of other nationalities have built up profitable businesses whenever they were willing to take the time and trouble to learn the requirements of the market and to conform to them. The United States has a great advantage in being popular both as individuals and as a nation. It must be remembered, however, that it is never safe to generalize about India. A statement which is true of one place is misleading if applied to another. It is necessary to make sure of the real facts and to study India by commercial districts.

PURCHASING POWER OF INDIAN INHABITANTS.

The traveller in India is apt to be deeply impressed by the abject poverty of the working classes and to feel that the purchasing power of India as a whole must be negligible. This, however, is an excellent instance of the danger of making conclusions on insufficient evidence. India produces enormous crops of a great variety of products, some of which, like jute, are almost indispensable to the industries of other lands. It has great natural resources in its forests, and its coal, iron, gold, and other mines. The value of the output of its factories and mills (many of which use hydro-electric power) is enormous, not to mention the productive power of its huge armies of low-paid labourers available for agriculture, commerce, and industry. The masses consume relatively little; hence, the annual increase in national wealth accruing from the excess of production over consumption is much more considerable than would be supposed.

In the Occident a very large part of such national surpluses is divided among the masses, who spend it on comforts and luxuries for themselves, such as clothes, talking machines, automobiles, and motion pictures. In India, however, the greater portion of this surplus is retained by money-lenders, landholders, factory owners, merchants, and other capitalists and employers of labour. The British usually endeavour to save enough to retire and spend the remainder of their lives in England, but the wants of the Indians are few, their mode of life is simple and unostentatious, and they often save much of their incomes and invest them in the industries of the country, although many actually hoard silver. Thus they can either buy material for increasing the industries of their country or articles for their own pleasure.

The problem of each American merchant is how to appeal to the owners of this surplus in such a way that they will buy his products. Success is likely to attend the man who arouses and satisfies the desires of the classes rather than of the masses. This can be done in various ways. Owing to the lack of a common language and of newspapers and magazines, advertising is in its infancy. The use of billboards, posters, shop windows, and calendars is but little understood, and what is sadly needed is an authoritative investigation into the best means of reaching both the upper and lower classes.

COMMERCIAL DISTRICTS AND PORTS OF INDIA.

For purposes of trade, India is roughly divided into five great districts, dependent upon the principal ports. These districts are Bengal, the principal port of which is Calcutta; Bombay; Madras; Sind, which includes the port of Karachi; and Burma, the foreign trade of which is carried on through the port of Rangoon.

Karachi, the port of Sind, supplies Sind, Baluchistan, the north-west frontier Provinces, the Punjab (Amritsar and Lahore), and portions of the Native States of Rajputana, in certain cases as far as Delhi. It has the disadvantage of being separated by deserts from the fertile Provinces to the north.

Bombay caters to the trade of the Bombay Presidency, portions of Central India, Mysore (Bangalore), Hyderabad, Berar, portions of the Central Provinces (Nagpur) and of Rajputana, Baroda, the United Provinces (Cawnpore, Lucknow, and Allahabad), and Delhi. It has the great advantage of being nearer to Europe than the ports on the eastern coast. Its harbour, with excellent port facilities, can be used at all seasons, and it has excellent railroad connections with the producing and consuming regions.

Madras serves principally Southern and

Central India, Mysore, Hyderabad, and portions of the Central Provinces (Nagpur). It is close to important producing and consuming districts, but its harbour is not entirely satisfactory.

Calcutta has the great advantage of supplying the great plain and delta of the Ganges, which are thickly populated and agriculturally productive. It also supplies portions of the Central Provinces (Nagpur, Bihar and Orissa), the United Provinces (Benares, Allahabad, Cawnpore, Lucknow), Delhi, and Assam. Its harbour has the disadvantage of a long and tortuous approach through the shifting mud banks of the Hooghly. This port has practically a monopoly of the jute trade.

Rangoon, the great rice-exporting port, conducts the greater part of the trade of Burma, which has few economic relations with India, from which it is separated by mountain ranges and the swamps at the mouths of the Brahmaputra and Ganges. No railroad has been built to connect it with the Indian railroad system.

Colombo confines its trade to the island of Ceylon, which is not a part of India, but is a separate Crown colony. It has excellent through rail service with Madras, broken only by a short steamer passage at Adams Bridge.

It is not possible to draw hard and fast divisions between the economic districts, which overlap even more than is indicated, varying with different commodities, steamship service, and seasons, but an understanding of the commercial districts of India is of importance to Americans who wish to sell goods through representatives in India, many of whom ask for exclusive agencies covering India, Burma, and Ceylon.

Although there are some large concerns whose organizations cover the whole country, most of them do business efficiently only in a limited area, and it is not usually wise to give a firm in one port an exclusive agency for all India. It is usually more satisfactory to have an agent in each port, with a definitely limited territory. Only after careful investigation of the selling organization of a concern should exclusive agencies be given for all India, and very rarely for Burma and Ceylon also.

American Trade with India.

The United States purchases from India large amounts of raw materials and partially manufactured goods, such as raw jute, gunnies, and burlap, hides, skins, leather, lac, tea, raw cotton, wool, saltpetre, coir, drugs and medicines, tanning and dyeing materials, bones and bone meal, manganese, mica, vegetable oils and oil seeds, paraffin wax, rubber, pepper and other spices, and essential oils. Indian imports from the United States include apparel, haberdashery, and second-hand clothing; cotton, silk, and woollen textiles; belting; boots, shoes, and leather; chemicals, drugs, patent medicines, paints, and dyes; kerosene and lubricating oils and greases; cutlery; lamps; clocks and watches; carriages and carts; motor vehicles; agricultural implements and machinery; electrical machinery and goods; hardware and tools (including machine tools); optical, surgical, scientific, and photographic apparatus and instruments; mining, metal-working, refrigerating, cotton, jute, woollen, boot and shoe, rice, and flour machinery; steam and oil engines; copper, brass, and aluminium; a great variety of iron and steel manufactures, from iron nails to bridge girders; locomotives, cars, and railway material; timber; paper and books; provisions and canned goods; rubber goods; tobacco; soap and toilet requisites; and sporting goods. Besides these items there are others shipped from factories in Canada and the United Kingdom which are owned by Americans.

That American purchases from India are normally larger than our sales to that country is shown by the fact that Indian imports from the United States amounted to 252,673,890 rupees during the fiscal year ended March 31, 1920, 352,979,080 rupees for the fiscal year 1920–21, and 216,084,782 rupees for the fiscal year 1921–22, while exports from India to the United States during the three years totalled 486,211,870 rupees, 347,415,840 rupees, and 249,050,415 rupees, respectively. Thus Indian exports to the United States exceeded imports from America by 233,537,980 rupees in 1919–20, and 32,965,633 rupees in 1921–22, although in the year 1920–21 the balance was in favour of the United States to the extent of 5,563,240 rupees.

Indian Market for American Goods.

It is interesting to note that the United States ships to India relatively small amounts of undershirts, socks and stockings, buttons, bicycles, building materials, heavy chemicals, electric lamps, enamelled ware (used in great quantities), furniture, canned fruits, cheap jewellery (found in every bazaar), paints, railroad cars, soap, and wire. There would seem to be possibilities also for increased sales of machinery for the boot and shoe, flour, oil, sugar, rice, paper, textile, and agricultural

industries; sewing and knitting machines; and saw-mill machinery.

The field would seem to be especially promising in the electrical industry, as increasing amounts of electric lights and fixtures of many types, electric water heaters, household and office appliances, and electrical machinery are being bought for large and small industrial plants, especially in Bombay and in Mysore, where electric power is sold for one-half anna (16 annas=1 rupee) per kilowatt hour from the State hydro-electric plant. In this field, however, German competition is increasing in efficiency.

Many of the manufactured articles which have been enumerated are capable of large-scale production or are lines in which American inventive genius has demonstrated its ability. It seems probable that intelligent merchandising and scientific advertising would very largely increase American sales of these goods and might even lead to purchases of other American products which are rarely seen at present.

For instance, an acutal inventory of the bazaars shows that the Indian masses are now buying regularly large quantities of aluminium ware (plates, bowls, mugs, spoons, cups, saucers, tea strainers, beakers, ladles, soap boxes, food carriers, frying pans, stewpans, kettles, and covered dishes), blacksmiths' tools, buttons, galvanized buckets, biscuits, brushes (hair, shaving, shoe, clothes, tooth), bicycles, beads, blankets, crockery (covered dishes, teapots, plates, bowls, cups, and pitchers), gilt collar buttons and cuff links, clocks, carpenters' tools, combs, candles, corkscrews, canned fruits, breakfast cereals, collars, cotton textiles in great variety, dog chains, blue and white enamelled ware (beakers, frying pans, pails, food carriers, covered dishes, plates, bowls, cups, saucers, washbowls, mugs, teapots, kettles, stewpans, tea strainers, and pitchers), electric flash lamps, egg beaters, enamelled cloth, fountain pens, garters, gasoline, stoves and lamps, glass tumblers, hinges, hair clippers, hardware, ink, cheap jewellery, jams, kerosene stoves and lamps, key rings, knives (kitchen, table, and pocket), locks, cheap metal and glass lamps, lanterns, mirrors, meat grinders, mouse and rat traps, nickel forks and spoons, nails, needles, neckties, oilcloth, padlocks, pencils, pens, pins, prepared paints, playing cards, patent medicines, razors, socks, stockings, sewing machines, stirrups, screws, safety pins, toilet and washing soap, slates, shoe brushes, shoe polish, stationery, sewing cotton and silk, steel frying pans, sporting goods, sweaters, scissors, small steel safes, soap boxes, spectacles, toys, thermos bottles, talking machines, thimbles, toilet articles, undershirts, vises, varnishes, cheap watches and wrist watches, whiting, woollen mufflers, and watch chains.

It is quite true that the United States will have to meet sharp competition in steel goods from Great Britain, Germany, Japan, Belgium, France, Czecho-slovakia, and other countries, but some American manufacturers are able to sell certain articles in the face of the most intense competition and seem to find the trade desirable. In some cases our shippers meet prices and in other cases quality and service triumph over price, for the Indian buyer fully realizes real value under certain conditions.

It must be remembered, however, that the Indian masses are miserably poor (the most recent estimates are that the average annual income per capita is from 50 to 80 rupees) and that but little cash is available even to buy clothing after the food has been paid for, which is by far the largest item in the daily expenditure of the masses. A study of Indian family budgets gives most interesting data regarding the margin of cash available for the purchase of manufactured articles.

Various authorities differ considerably, but some investigators state that 70 to 75 per cent of the income of the poor families is spent for food alone; from 20 to 25 per cent on clothing (almost entirely coarse cotton cloth, much of which is used in lengths cut from the piece without further cutting or sewing); and from 5 to 10 per cent for all other things. Therefore, cheapness and not quality or appearance is the main requisite for the Indian bazaar trade. The buyer may realize the superior value of an American padlock over any other, but when wages vary from 10 cents to 32 cents per day, he may have to buy the comparatively worthless articles simply becaues he does not have money enough to buy the better one after paying for his daily food.

The Indian merchant who handles the bazaar trade never ceases to emphasize the fact that everything must be sacrificed to cheapness, and the Germans are catering to this demand; but this applies to the masses only, for in India, as in every other country, there are many persons in fairly comfortable circumstances who can usually manage to buy what they really want.

Possibilities of the Bazaar Trade

A number of American travelling men feel that cheap stores, operated like our 5 and 10-cent stores, would pay in India, if the goods were properly selected, as the Indian buyer uses a great variety of such articles and is not at all concerned with the slight defects, such as are found in our "seconds," or even with more serious imperfections.

It might pay to investigate more thoroughly the whole subject of the bazaar trade in miscellaneous articles (often called "muck and truck"), as other countries seem to find it desirable. It is not at all impossible to educate the Indian ryot (cultivator) to save his money to buy new things—the universal use of our hurricane lanterns is an example. Certain articles, if properly advertised, might take the fancy or meet the needs of those who are better off, such as small glass crank churns, which are sold in one city where the inhabitants like to make their butter at home. At one time the United States shipped to India large quantities of playing cards, as the people play a number of card games.

The growth of education and of Western culture tends to increase the demand for American boots and shoes, sporting goods, men's furnishings, and books, for the educated Indian young man has a keen eye for appearance and style. Although French shoes are preferred by the women, the "snappy" styles of the American lines of shoes please the fancy of the Indian man, and the sale would be larger if prices were not so high, as they have to compete with those shipped from Europe. The lower grades are made in a number of places in India from Indian leather, either in factories or by hand.

There is constant complaint about the lack of wear in the socks and stockings on sale, and even the poorer classes are changing their hidebound customs of dress and taking to undershirts and to sweaters in the colder regions.

Growing Need for Machinery.

American machinery (particularly machine tools) is found in many places, and carpenters' tools, especially files and hammers, are growing in popularity. American hardware, principally locks, padlocks, hinges, nails, tacks, screws, bolts, nuts, and washers has long been well established, but is now having to meet sharp competition, not only from the established British manufacturers, but from Germans, Belgians, and French, whose cost of production is alleged to be the lowest in the world in certain items.

Certain kinds of American machines are to be found in some cotton mills and the types in use do not differ very greatly from those which we have sold to China. If the United States can meet competitive prices and will produce designs suited to the country, a market can be built up here for saw-mills, rice, flour, and oil mills; cotton gins and cotton presses; machinery for cotton, silk, and woollen spinning and weaving; pumps, threshers, reapers, mowing machines, harvesters, sprayers, tractors, plows, harrows, disk harrows, cultivators, seeders, drills, hoes, and shovels; electric motors; and a large number of similar articles. Even the Government of India found it desirable to buy American saw-mills. American logging outfits are in use. American hydro-electrical machinery is found in the principal plants, and American electrical apparatus of various types is gaining in popularity.

There is a growing demand for many kinds of patented machines and appliances, such as typewriters, sewing machines, cash registers, multigraph machines, adding machines, and a host of contrivances for domestic and business use.

It must not be supposed that the Indians are clamouring to buy these articles. There are only a few machines of certain kinds in use in India, and these are often only for purposes of trial at Government experiment stations or on the estates of Indian princes or large landowners. Some give satisfaction and others do not, but on the whole, they are growing in popularity, the difficulties are being overcome, and their use will increase little by little, for hydro-electric transportation, forestry, and certain agricultural conditions resemble more closely those of the United States than of Europe. The growing demand, however, is largely being supplied by other countries, which take more pains to cater to Indian requirements.

Apart from the lack of capital, one of the principal reasons why machinery is not used more in India is the relative abundance and cheapness of labour. Children sometimes receive 6 cents a day, women 10 to 16 cents, and men 10 to 32 cents. They lodge and feed themselves and, although not efficient, are often cheaper than machines, taking into consideration the purchase price, fuel, wages, other operating costs, repairs (a large item), and obsolescence of the machinery.

In spite of the huge population, there is

no general surplus of labour. Wages are increasing rapidly, while efficiency decreases, as the workmen know that they do not have to exert themselves to hold their jobs, since there are usually vacancies in the mills, in addition to the fact that vast areas of land are uncultivated and many landowners would be glad to secure numbers of labourers or tenants.

The cotton mills and other industries of Calcutta, Bombay, Ahmedabad, Ujjain, Indore, Delhi, Agra, Madras, Cawnpore, Lahore, Lucknow, Sholapur, Baroda, Nagpur, Bangalore, Mysore, and many other places have made large drafts upon the industrial population, and the constant demands for labourers in the tea gardens of Assam and in the indigo and sugar plantations of Behar make it increasingly difficult to secure common labour, not to mention skilled or partly skilled mill operatives. Workmen are consequently very independent, strikes are called on the slightest pretext, and the net result is a rapid increase in wages, not accompanied with added efficiency, so that the cost of production tends to rise, while the buying power of the whole population, and consequently its effective demand for manufactured commodities, is largely increased.

Under these circumstances employers are turning more and more to machines. Coal-cutting machinery is urgently needed in the Bengal coal fields, as the supply of labour is inadequate and the output per man is very low. The high price of fodder and the shortness of the planting season make tractors very desirable for ploughing heavy soils in many parts of India, and it will soon be difficult to produce certain staple crops by the use of bullocks and primitive ploughs. Rice mills are coming more and more into use and are rapidly superseding the primitive methods of husking rice by grinding in hand mills or by pounding in mortars. Improved steel and iron cane crushers are taking the place of the old sugar mills with wooden rollers turned by bullocks, and flour mills are on the increase.

It will not be long before the labour situation will force the adoption of machines wherever circumstances permit. Fortunately for this movement toward industrialization in India, it has been found that many individuals of a number of the Indian races can be trained to perform fairly well relatively simple operations on machines which are not too complicated. The enormous profits of the cotton and jute mills (often from 30 to 100 per cent a year) show how profitable the use of machinery really is, and it is only a matter of time until there will be a large and constant demand for the machines and appliances mentioned, many of which are regularly made in America.

The increasing numbers of operatives in the mills, who are receiving substantial cash wages (some families earn 80 to 100 rupees a month when all the members are working), are constantly calling for larger quantities of imported goods.

Government Assistance in Extending American Trade.

Unless American manufacturers study Indian markets carefully now they will not get their share of this trade when it develops, as their competitors will be too strongly intrenched. The time for study is when business is quiet. When business is rushing, basic conditions are obscured and deductions made under abnormal conditions are apt to be dangerously inaccurate.

American business men who wish to investigate the possibilities of Indian markets as outlets for their products can obtain the import and export figures for successive years from the United States Bureau of Foreign and Domestic Commerce. These are published annually by the Government of India in great detail in volumes entitled "Annual Statement of the Sea-Borne Trade of British India with the British Empire and Foreign Countries," and in monthly "Accounts Relating to the Sea-Borne Trade and Navigation of British India," from which it is possible to trace not only the fluctuations in the trade in various commodities but also from what countries they were bought and into what ports they were imported. The Bureau of Foreign and Domestic Commerce also has a wealth of detailed information about a large number of articles and industries.

An American merchant who is considering the extension of his business abroad will in many cases find it profitable to study with some care the material on India which the Bureau of Foreign and Domestic Commerce is anxious to place at his disposal. He may decide that conditions in India are not favourable for his line, but if they seem sufficiently attractive to warrant further investigation, he can obtain lists of buyers of the articles in which he deals from the Bureau, and the trained experts in the commodity divisions of the Bureau will furnish him any assistance he may desire in conducting correspondence.

The American Trade Commissioner in Calcutta, the Consul-General in Calcutta, and the Consuls in Bombay, Madras, Karachi, Rangoon, and Colombo (Ceylon) are constantly sending in reports on business conditions and will be glad to aid with suggestions or in any other way that may be effective.

It is not advisable to write to the chambers of commerce in the different cities of India, as they are largely composed of Europeans, who are not inclined to furnish information which will help their competitors. There are some chambers of commerce composed of Indians, but they are not usually organized to collect statistics or to distribute trade information by correspondence.

It is not possible to decide offhand whether a given American product can be sold in India. There are too many instances in which an article, apparently suited to conditions, has failed to find a market, or where a good demand was developed for articles which were believed to be unsuited to local conditions. The explanation is probably largely in merchandising methods. The creation of demand by advertising and a study of the psychology of the people is practically unknown. If a preliminary survey seems encouraging, the next step is to get a general idea of Indian social, business, and financial conditions in order to determine the problems which will have to be met.

The German Works Councils.

In 1918 the Norwegian Government appointed a Commission to consider the questions of profit-sharing and participation of the workers in the management of industrial undertakings. In the autumn of 1921 this Commission sent a deputation, headed by Councillor K. F. Dahl, to Germany, to study works councils on the spot. The deputation spent several weeks in Germany and visited Berlin, Hamburg and several towns in the industrial district of Western Germany. Councillor Dahl has published an article in "Soziale Praxis" giving the results of his observations.

The writer discusses (says the *Industrial and Labour Information*) the effects of the Works Councils Act from the standpoint of the two chief functions of works councils: (1) to protect the economic interests of employees (salaried and wage-earning) in relation to their employers, and (2) to support employers in their efforts to increase production.

In the opinion of the writer, the works councils have proved a most suitable and effective instrument for the protection of the interests of the workers. Their assistance has manifestly enabled the workers to exercise far greater influence over the management of individual undertakings than they had been able to exercise through their Trade Unions. During recent years, which have been years of very great difficulty for the German working class, the value of the works councils as instruments for promoting the interests of workers in relation to capital has been incalculable, both in economic questions and with regard to social problems.

In many quarters it had been feared that the works councils might weaken the influence and authority of the trade unions, but such apprehensions have proved groundless. Generally speaking, the relations between trade unions and works councils have been characterized by mutual trust and confidence. On both sides the necessity for mutual support and co-operation has been realized.

The question whether the works councils have fulfilled their second important function—to support the employer in his efforts to increase production—is, in the opinion of the writer, much more doubtful. Since the institution of works councils in Germany, intensity of work and output have undoubtedly increased considerably. Whether this is to any great extent due to the influence of works councils, or whether it is exclusively or in the main due to other factors is a question which is keenly disputed between employers and workers.

After referring to certain points in the Works Councils Act which appear to require elucidation and amendment, the report declares in conclusion that the German works councils system in its present form can hardly be looked upon as final and complete, but rather as still in the experimental stage. It may, however, be definitely stated that the system, even if it requires modification in certain respects, offer an excellent basis for future development. Its underlying principle, equality of rights of capital and labour in the fixing of labour conditions, marks, in the opinion of the writer, the beginning of a new era in the economic history of mankind. In translating this lofty principle into action the German people have made considerable progress towards the practical realization of social justice.

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Industrial Organization.

By John Lee, M.A., M.Com.Sc. Published by Sir Isaac Pitman & Sons, Ltd., Parker Street, Kingsway, London, W.C. 2. Price 5*sh.* net.

Mr. Lee has given in a convenient and handy form in this book of about 100 pages, a mass of useful information on various recent developments of industrial organization throughout the world. He does not, as he plainly puts it, essay to build up any theory of industrial organization. He points to the "tendencies" of the times in the region of industrial organization. Some idea of what he attempts in the book can be had from its contents. In the first chapter he deals with the subject of the basis of organization in industry. This chapter he calls "The ultimate organization" which is not, in our opinion, self-expressive for a title. An organization which gives security to capital and to labour and gives "full play to the spiritual sense of mutual dependence," will have gone, in his opinion, as far in ultimate organization as we need go." The second chapter is devoted to industrial organization in the United States; the third to Past and Present Tendencies in France, Germany and Italy; the fourth to industrial organization in England; the fifth is devoted to general tendencies and indications and the sixth and final one to Legislation or Evolution. A brief bibliography and a good index are provided for the book, and these enhance its value. After a review of industrial organization in England, Mr. Lee says that the general organization of industry in England, imperfect though it be, does contain germs of a fully developed scheme, adaptable to newer conditions "demanding in turn an educated body of workers and also an enlightened leadership on the part of employers." The fifth and sixth chapters are well worth careful study in this country, where labour legislation is being continually urged. These chapters are not only instructive but also suggestive to a degree. Mr. Lee has managed to put into these two chapters matter which, in the hands of a less skilful writer, would have grown into a volume. We commend the book to industrial students and magnates in India.

The Foundations of Japan.

By J. W. Robertson Scott. Published by John Murray, Albemarle Street, London. Price 24*sh.* net.

Books on Japan are still being written. This is a happy sign of the times. Japan has so many attractions to the British traveller that he does not mind adding a book or two to the already existing literature on the country and its people. Mr. Scott's volume is not of the ordinary type. It is a serious attempt made to study the country and the people *in situ*. Mr. Scott records in this portly volume (it runs to over 400 pages and is copiously illustrated and indexed) all that can be learnt by an intelligent and observant person travelling without undue haste through Japan. Mr. Scott tells us that the book is built upon notes made during journeys of 6000 miles in the rural districts of Japan. The book is by no means a mere record of impressions; it is descriptive to a degree. It is not possible in a brief review to indicate the comprehensive character of this book. Its Japanese title, "The Core of Japan" gives a far better idea of it than the title chosen for it by its author. Some idea of the book may be had when we state that it has 40 chapters in it, that it deals with every phase of Japan and Japanese life and that it has been practically written on the spot by a person who went to Japan with a view to learn. A book for every one who wants to know of Japan or Japanese first hand.

Acknowledgments.

(1) Report on the Reconstruction of small and scattered Agricultural Holdings in various Countries of Europe by Ramachandra Sama Rao Patil, B.A., LL.B., F.R.Econ.S., etc. Baroda Printing Press, Baroda. Rs. 2—0—0

(2) Mysore Geological Department Records, Vol. XX—1921, Part I. Government Press, Bangalore. Re. 1.

(3) Administration Report, United Provinces. The Government Press, Allahabad. Rs. 3—8—0.

(4) Hours of Labour in Industry—Germany. Re. 1.

(5) Hours of Labour in Industry France. Re. 1.

The Sugar Output.

"The American Sugar Bulletin" has an interesting note regarding production in Poland, which, during the past twelve months, it says, has taken a long step toward resuming its proper place among the sugar-producing States of Europe. This has not been brought about so much by increased sowings as by increased yields, and it appears that Poland is one of the first countries to have returned its yields to a point comparing favourably with those of pre-war days. In 1921-22, 203,000 acres of beet were grown, producing 174,676 tons of sugar (expressed as raw). In 1922 the sowings were 267,000 acres, an increase of about 30%, while latest reports state that 338,200 tons of sugar were produced, or almost 100% over the product of 1921. In pre-war days the territory which is now Poland, cultivated about 425,000 acres and produced 623,000 tons of sugar, an amount which would have made it the fifth producer of Europe. Last year exports of about 40,000 tons were permitted and the home population got through the year on only 135,000 tons, although in pre-war days it required 250,000 tons. This year the Government is acting more liberally, toward its own people and, after allowing exports of 80,000 tons from German Poland and 60,000 tons from Russian Poland, has forbidden further shipments abroad. It thus appears that almost 200,000 tons will remain for domestic use, or 50% more than last year.

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Industries in Mysore, 1921-22.

By "Viator."

It is very difficult to review the last Administration Report of the Department of Industries in Mysore for there is so much in it that is of interest and also, it must be added, so much that invites criticism. We would remark, at the outset, that we are in entire agreement with the statement of the policy of the Department given in the Report, namely that its work should consist more and more in investigations, in assisting private enterprise in carrying out schemes without any direct aid from Government and in furnishing expert advice. It is for the Department to point the way and for private enterprise to decide whether to travel along the road.

We cannot do better than follow Mr. D'Souza's arrangement of reviewing the work of the Department under its main heads. The first of these is "Demonstration factories maintained by the Department and other experimental and investigation work". In commenting on the work of the central industrial workshop, the soap factory, the weaving factory, the art workshop and the arts and crafts depot, Mr. D'Souza remarks that a Department, whose primary object is to demonstrate the possibilities of particular industries, has to look at the question from a different standpoint from the ordinary manufacturer whose main object is to make the most profit. With this view the Government, in a singularly sound and enlightening review of the Report which it is a pleasure to read, do not agree. They hold, in our opinion rightly, that though these industrial concerns were originally started as experimental and demonstration factories, they have now outlived that stage so that their working will have to be viewed from a strictly commercial point of view in the future as far as possible. The central industrial workshop and the soap factory did not do so badly judged by this test. The former made a gross profit of Rs. 29,176 and the latter a net profit of Rs. 23,933. The workshop is getting a steady flow of orders from new industrial concerns which is, as Mr. D'Souza says, satisfactory evidence of the confidence it has inspired in its ability to manufacture machinery. Its main line appears to be the manufacture of rice mills and of machinery for oil and other factories but, during the year under review, it received a large order to the value of nearly half a lakh of rupees for machinery for reeling silk. The soap factory, having served its purpose of demonstrating successfully the commercial possibilities of soap manufacture n Mysore, is to be handed over to a private company. The weaving factory and the art workshop stand on a somewhat different footing. Profit-making possibilities do not loom so large in their case and their educational side is even more important. Mr. D'Souza is right in holding that the weaving factory should be used mostly for experimental work and as a training ground for persons who want to take up the industry. It should be taking up new lines such as the supply of new designs, the adoption of which is calculated to give a large margin of profit, the testing under manufacturing conditions of the improved appliances designed in the workshops and the dicsovery of further ways in which the weaving of cotton, silk and wool can be improved. What the existence of the factory has meant to the State can be guaged from the figures of flyshuttle looms fitted up since it began operations. These now number 4,434. On the assumption that the majority of the looms are employed on the manufacture of the cheapest cotton saries, Mr. D'Souza estimates that the value of the increased outturn resulting from their use may be put at Rs. 30 lakhs.

As we have already pointed out, the main

value of the art workshop is educational. They afford training and means of support to about 120 men and boys who are unskilled when they come but soon attain to a very considerable degree of skill for they turn out carving and inlaying work of high class. Some of the industries carried on in the workshop are capable of exploitation on a large scale. The manufacture of pirns and bobbins for local mills from suitable local woods, for which a large order was received during the year, is one of these. Mr. D'Souza reports that steps have been taken to interest a wealthy capitalist in starting a concern to extend the production of such articles as these to the maximum limit. If this effort proves successful, the workshops will concentrate on articles which demand high artistic skill but are not affected by the competition of machine-made goods and on the demonstration of new uses from Mysore woods.

The art and crafts depot does not, of course, confine itself to the sale of articles manufactured in the art workshops but draws on all parts of the State. Its clientele is at present limited to local residents and visitors, but, in spite of this, its monthly sales of about Rs. 4,000 made it self-supporting. Mr. D'Souza has visions of a greatly extended sphere of activity, a suitable agency to distribute work throughout the State and to supervise its execution together with greater freedom of action in making advances and purchases on the one hand and, on the other, branches of the depot in Bombay and other large cities of India.

The district industrial workshops are a special feature in Mysore. Only one of these, that at Shimoga was working throughout the year. It started in 1919 and is now earning a profit. The workshop at Tumkur was completed late in the year but that at Kolar has yet to be finished. Others are in contemplation.

As for other activities under this head, Mr. D'Souza treats the recommendations of the Indian Sugar Committee in regard to sugarcane mills with scant courtesy. He holds that the impression the Committee formed about the Departmental experiments was not correct as they ever attempted to get any information from the Department and that, in consequence, their suggestions in regard to Mysore have not much practical weight. To the best of our recollection, among the witnesses examined by the Committee were Sir Alfred Chatterton, and the then Director of Industries. Two or three leading cane cultivators who had experience of the Departmental installations were also examined. It is difficult to see what more the Committee could have done in getting information from the Department. The gist of the Committee's criticism was that the installations put up by the Department had been put up without sufficient consultation with the Agricultural Department and without sufficient consideration of local conditions. That this criticism was justified up to the hilt is shown by the facts given by Mr. D'Souza himself in regard to three installations, the only one he mentions. We are told that the plant at Hudi is set up at a place where there is little supply of cane which has to be brought from a distance of nearly five miles. The crusher is worn out and extraction is poor. It is, therefore, necessary to transfer the plant to a more suitable locality. This is exactly the point made by the Sugar Committee. Again at Channarayapatna, the quality of the cane is "unfortunately" very inferior and the milling results have not been satisfactory. It is not explained why the inferiority of the cane was not discovered before the installation was put up. The Agricultural Department could have told had it been consulted. The plant at Channarayapatna is old and inefficient. In these circumstances, Mr. D'Souza regards it as satisfactory that it has been possible to make jaggery at a cost not much in excess of what is paid by the local ryots. But the whole object of these installations is to show that jaggery can be successfully made at a cost considerably below what is paid by the local people. Finally, it is stated that the steam heating plant at Agaram for manufacturing jaggery which was started by Sir Alfred Chatterton has been lying idle for four years past. The mere recital of these facts is, in our opinion, more than sufficient to show that the impression formed by the Sugar Committee was the only one possible. The Government review puts the matter in the proper light when it points out that the Department has not, up to date, pushed the experiments to a conclusion and demonstrated their success and that more vigorous action is called for to prove that the installations can be worked with profit or that the work should be abandoned and the necessary expenditure thereon avoided.

The second of Mr. D'Souza's heads is "Industrial enterprises newly started and schemes under investigation." There is not much to record about these. Messrs. V. Manickavelu

Mudaliar & Sons have been granted certain blocks of land containing kaolin in order to enable them to start porcelain works but cannot apparently get far without the help of the Department which has prepared a preliminary scheme for them and is making enquiries on their behalf regarding the supply of correct plant, the construction of kilns and the purchase of machinery. The question of making pulp from bamboos has been deferred owing to the very high cost of bringing the bamboos to a central factory but other materials are being tested. Arrangements have been made to start a large furniture factory. "Detailed specifications and quotations" have been obtained for some ten industries which are more or less new to the State, among them the manufacture of glue, matches, cement, bricks and spun silk from silk waste and the establishment of bone manure works and it is proposed to concentrate attention on starting a few of these with the aid of private enterprise. The Government pertinently remark that, if the Department can enlist the co-operation of private persons to start at least two or three of the ten schemes, considerable head-way will have been made in the development of private enterprise in the State.

Mr. D'Souza deals with State aided concerns under this head though these would seem to fall more naturally under his next head. Of these, the Bangalore Silk, Woollen and Cotton Mills, which has two Government Directors on its Board is the most promising. The Mysore Cotton and Silk Manufacturing Company is also doing well but the slump in the leather trade has hit the Mysore Tannery hard though it managed to escape a loss. The Government review candidly describes the Thirthahalli Tile Factory as a dismal failure. That and the Aryan Hosiery Factory which has been little more successful are to be handed back to their former private management, for Government asisstance has proved unable to rescue them from the slough into which they had fallen. The Art Litho Press is another enterprise which has not justified the assistance it has received from Government.

We next come to the head "Administration of Taccavi Loans and condition of the concerns financed by the Department". The Report is not very cheerful reading as regards this head for, of the Rs. 7.86 lakhs advanced since September, 1913 only Rs. 3. 4 lakhs have been recovered towards principal and Rs. 6. lakhs towards interest. A detailed survey of the industrial installations financed from loans has been made but only the general results of the enquiry are given in the Report. These are not encouraging for it has been found that only in very few cases are proper accounts maintained for the installations and that the continued existence of the installations is almost the only evidence that they are working successfully. However, there can be no doubt that the grant of loans has led to a marked development of pumping installations, rice and flour mills and especially of the oil-milling industry. There are now, for example, 46 rice mills in the State as against 3 in 1913 when the Department undertook the development of the industry and of these 27 have derived direct financial assistance from Government.

Mr. D'Souza's three other heads, "Improvement of Commerce," "Development of Posts and Telegraphs," and "Other Miscellaneous Works" call for no comment though it is worthy of note that the total value of imports and exports during the year was Rs. 24.68 crores against Rs. 28.83 crores in the previous year. Mysore, therefore, suffered severely from the adverse trade conditions of the year. The cloud has, however, begun to lift and we have every hope that the all-round improvement which has set in will mean that the next report on the work of the Department of Industries will be a more cheerful document than the one under review.

"The Industrial and Labour Information" summarizing from a German journal says that three large towns in North-West Germany—Geestemund, Lehe and Rustringen—have recently been added to the list of municipalities and communes which are members of the local distributive society. The municipalities of Geestemund and Lehe have become members of the distributive Co-operative Society and Savings Bank, Unterweser. The municipality of Lehe has transferred insurance policies to the value of 250 million marks to the insurance section of the Co-operative Society. Negotiations are also in progress with the Geestemund municipal authorities for the transfer of insurance policies of a very considerable total value. Rustringen has become a member of the distributive Co-operative Society for Rustringen district and has contributed 20,000 marks to its capital. The municipality have as a reason for this step that the town will be enabled to procure supplies on lower terms through its membership of the Co-operative Society.

The Shipping Situation in the United States.

By Francis H. Sisson, Vice-President, Guaranty Trust Company of New York.

The refusal of Congress to pass the Subsidy Bill leaves the United States Shipping Board's problems still unsolved. There is a direct continuing loss of about $140,000 a day, or $50,000,000 a year, with perhaps three-fourths of the vessels tied up. But this estimate takes no account of depreciation or interest on the investment of more than three billion dollars. Interest alone at five per cent would represent an additional $400,000 a day, or $150,000,000 a year.

The opinion is widely held that the ships should be disposed of as quickly as possible to avoid further operating losses. Recent sales indicate that the Board cannot now realize more than $30 a ton, taking the fleet as a whole, although some of the tankers would bring more than this price. The amount realized from the sale of the entire fleet on this basis would be about $300,000,000, or less than ten per cent of the original expenditure.

The current market value of ships is indicated by the prices paid for vessels purchased recently by German companies. They are approximately as follows: For ships not more than ten years old, $35 a ton; eleven to fifteen years old, $18; sixteen to twenty years old, $13.50; twenty-one to twenty-five years old, $9; more than twenty-five years old, $4.50. Before the war cargo steamships were constructed in American shipyards at from $60 to $65 per ton, and in British shipyards at from $30 to $50 a ton.

Most of the Shipping Board vessels were constructed in great haste for war purposes and are not well adapted to highly competitive commercial trade which necessitates taking advantage of any special features of size, design of power applicable to the conditions of particular routes. Many have been laid up for such a length of time that considerable sums must be spent to put them in a seaworthy condition, and various authorities estimate that from twenty-five to fifty per cent, *i.e.*, some 2,500,000 gross tons, of the Shipping Board tonnage will have to be scrapped.

The destruction or dismantling of these ships would tend to stabilize ocean freight rates and remove part of the cloud that hangs over the shipping situation. In this connection it may be noted that the world's total tonnage of motor-driven ships increased thrity-seven per cent in the year ended June 30, 1922, while steam tonnage increased but four per cent. The keen competition is causing the increasing adoption on certain routes of the Discel-engined vessel, with its economies of operation.

The present shipping inactivity is the fifth recurrence of pronounced depression in the last half century. The longest and most severe depression followed the Spanish-American and Boer wars. Ocean freight rates went to a low level in 1900, and did not improve greatly until 1912. Present rates on the average are about twenty-five per cent of the level prevailing three years ago. Taking January 1920, as 100 per cent, the January 1921, rate was sixty per cent, January 1922, about thirty per cent, and January 1923, about twenty-five per cent.

Complete import and export statistics on a tonnage basis have not been compiled by many of the commercial nations, so that it is difficult to estimate the increase or decrease in the volume of the world's ocean-borne trade, but it is doubtful whether the total ocean-borne tonnage has yet reached the pre-war level. The future of American shipping must be considered, therefore, in the light of a world condition. Obviously, the prospect is for a continuance for some time of very active competition for overseas freight traffic.

The latest survey of the Shipping Board reports that privately-owned American vessels have practically abandoned operation in foreign trade routes on account of the cheaper operating costs of foreign vessels. They are turning to the intercoastal trade, which is reserved by law to American-built ships. While there were 143 ships in the intercoastal trade at the end of last year, only thirty-two privately-owned American vessels were competing in foreign trade outside the Carribbean. In addition, twenty-six vessels owned by large industrial companies were engaged principally in the transport of the companies' own products.

Important charges in the volume of passenger traffic to and from the United States are shown in the following table of trans-atlantic travel:

INCOMING PASSENGERS.

	1913	1920	1921	1922
1st Cl.	111,000	74,490	73,900	80,900
2nd Cl.	342,000	193,000	196,300	204,700
3rd Cl.	1,413,900	614,700	467,700	284,700

OUTGOING PASSENGERS.

	1913	1920	1921	1922
1st Cl.	104,400	66,700	68,900	77,800
2nd Cl.	141,200	130,200	120,800	138,000
3rd Cl.	472,800	263,000	357,200	182,600

The first-class travel last year was about seventy-five per cent of the annual volume in the years immediately preceding the war. The most noticeable change, however, is the drop in the third-class traffic to less than twenty-five per cent of pre-war levels. This decrease is largely due to immigration restrictions, and has cut the profits of many passenger lines, although fares in general have been increased.

One of the favourable trends in the shipping situation is the reduction of the world's idle shipping by nearly 2,000,000 gross tons during the last year. The Department of Commerce estimates that 9,000,000 gross tons of steamers were idle on January 1, 1923, or about one-sixth of the total steam tonnage of the world. Of this 9,000,000 idle tonnage, the United States Shipping Board had about 4,500,000 tons, and private American owners about 700,000 tons. The idle tonnage of the United States, therefore, was considerably more than one-half of the idle tonnage of the world.

Before the war the American shipbuilding industry was largely confined, apart from naval construction, to plants engaged in making tugs, barges, ferry boats, and vessels used on the Great Lakes or in coastwise shipping. The prospect is that very few of the many plants which sprang up during the war can continue to operate successfully. In the first place, the world is overstocked with ships, and in the second, American labour costs make competition difficult with countries having depreciated currencies or lower standards of living. On account of a greatly increased merchant fleet, the amount of repairing and reconditioning business will probably be much larger than before the war. Further business will probably be provided for a time by the dismantling and scrapping of Shipping Board vessels. Many plants, however, have been closed and dismantled, and others have been converted to such uses as making or repairing railway rolling stock. Until the volume of the world's trade increases to the extent of employing the existing capacity of ships afloat, there is little prospect of the profitable utilization of a very large percentage of United States shipbuilding capacity.

The failure of the proposed subsidy to shipping does not necessarily entail the abandonment of American competition for the overseas carrying trade.

The surplus of available tonnage, which adversely affect all ship owners may be expected to disappear with economic recovery where the war and its after-math have brought disorder and hindered the production and exchange of commodities. The approach in the United States to that degree of intensive utilization of domestic economic resources which characterizes a number of the more highly industrialized nations of Europe will operate increasingly to make possible in the shipping industry profits comparable to those earned in internal enterprises.

Creation of a Workers' University.

We note from the "Industrial and Labour Information" for March, that on 21st January 1923 a number of well-known scientists, literary men, representatives of university, social, occupational and political associations, and several deputies belonging to the Socialist Party met at Warsaw to discuss a draft constitution for a workers' university.

According to the text adopted, the objects of the workers' university are :—

(a) to organize systematic courses of lectures on various branches of art and science ;

(b) to organize courses of general and vocational instruction ;

(c) to organize reading rooms, libraries, museums, laboratories, exhibitions, scientific meetings and excursions, sports clubs, dramatic performances and concerts ;

(d) to push and sell popular editions of literary and scientific works, students' manuals, etc. ;

(e) to purchase premises to be used as theatres, cinemas, clubs, hotels, etc., and to maintain such institutions ;

(f) to support child-welfare organizations and assist all individuals or organizations engaged in activities similar to its own.

The headquarters of the university will be at Warsaw, but its activities will cover the whole country. It will be under the control of a Board of Governors consisting of 15 members.

The Board of Governors will at once make the necessary preliminary arrangements to enable the institution to begin work in the near future.

Co-operation in Mysore, 1921-22.

By "Rusticus."

Co-operation in Mysore in 1921–22 had a very quiet and not altogether satisfactory year. For this there were three main reasons. The Co-operative Department was, to a large extent, marking time whilst waiting for the Report of the Co-operative Committee. Seasonal conditions were not good in the maidan part of the State. Owing to financial stringency, the budget allotment for travelling allowances was halved and this meant severe restriction on touring. Of these three reasons for comparative stagnation, the last was undoubtedly the most important. There can be no expansion of co-operation unless the officers of the Department are ever up and about and abuses are bound to creep in if their vigilence is relaxed. The results of the restriction on touring appear to us to be apparent in every direction.

Statistics given in the Report thus show little progress. The number of societies increased by 22 to 1522, the total membership increased by 4.5 per cent to 96,912 and the total working capital increased by 4.8 per cent to Rs. 82 lakhs. Deposits fell by some Rs. 30,000 but, on the other hand, the net profit showed a small increase of Rs. 4,000 and reserve funds went up from Rs. 69 lakhs to Rs. 84 lakhs. The latter increase was the most satisfactory feature of the co-oppratioe year for it shows that there is nothing radically wrong in the condition of the societies. This is reassuring for there is much in the Report to show that all is not right. A study of the figures showing the objects for which loans are advanced, of the figures for demand and collections and of the figures for disposals of suits and execution decrees will, we think, show that there is every justification for this view. The percentage of loans advanced for paying off prior debts was practically the same as in the previous year, 27.8 against 28.3. The percentage of loans advanced for productive purposes fell from 68.4 to 61.9 whilst that of loans advanced for unproductive purposes rose from 4.3 to 10.3. It is this last figure which is disquieting for the extent to which it rises is an index to the extent to which co-operation is failing to achieve its great object, the encouragement of thrift. The Registrar offers no explanation of the increase but it may be presumed that the continuance of bad seasons had much to do with it though the readers of the Report, in the absence of explanation, will be inclined to attribute it to that restriction of touring and consequent lack of supervision on which we have commented. They will also see in this the cause of the fall in collections from 77.2 to 73.3 per cent of the demand. These are the figures for the collections of all societies but they are very much worse for the collections of central societies from primary societies. These amounted only to Rs. 1.66 lakhs out of a demand of Rs. 6.46 lakhs. Nothing can disguise the badness of these figures. The Registrar attributes the poor collections to the fact that the amounts lent out by the primary societies were not regularly paid by their members. This is a reason but hardly an explanation. If all societies were able to recover some three-quarters of what was due to them, it is not quite clear why central societies should only have been able to recover one-quarter of their outstandings from primary societies. The Registrar adds that, as the result of stringent instructions to the societies, a large number of suits have been filed against defaulters and that the decrees have been sent to the Revenue Department for execution. This brings us to what can only be regarded as a blot on Mysore co-operation and that is the slowness with which suits and decrees are disposed of. Of the 4,535 suits down for disposal during the year, rather less than half were disposed of and, of the balance pending at the end of the year, no less than 773 had been pending for more than one year. The Registrar himself set a bad example for of the 138 suits retained by him for disposal he only dealt with four. But the disposal of suits is carried out with lightening celerity when compared with the execution of decrees. There were 1,848 of these pending at the beginning of the year to which 1,406 more were added during the year. 604 only were executed. We must apologize for inflicting so many figures on our readers but in no other way can the true state of affairs be brought home to them. Is it surprising that primary societies should find it difficult to recover their dues from their defaulters when the latter realize, as they must by now, that some time in the dim and distant future, it may be five years hence or, judging from the present rate of progress, it may be fifty, a

decree will be executed against them? It is not surprizing that the Government note the state of affairs with some concern and have taken steps to remedy it, for decrees by the issue of sharp orders to the Amildars and for suits by the increase of the gazetted staff of the Department and by the prescription of simple rules to enable them to be heard without unnecessary waste of time. It is to be hoped that these measures will effect a speedy improvement for the present delays must inevitably discredit the good name of the Mysore Co-operative Department.

The investigation into the economic conditions of members of co-operative societies continued and forty-five more rural societies came under review during the year. 485 societies have now been examined with results that are not quite as satisfactory as might have been expected. For the total indebtedness of their members has increased by Rs. 5½ lakhs since they joined their societies and they still owe some Rs. 7 lakhs more to money-lenders than they do to their societies. On the other hand, their assets have increased by Rs. 46·5 lakhs. Some time ago, the Government called for the completion of the investigation in a selected area and for a report on the results but this has yet to come. We look forward with interest to the Registrar's interpretation of the figures and his opinion of their value. It is, for example, much easier to get at approximately correct figures for indebtedness than for assets. A man can, if he wishes, though he does not always wish and this is bound to effect the correctness of the total, give a fairly accurate statement of his debts but opinion as to the value of his assets must differ greatly according to the mentality of the person estimating it.

We are glad to see that the Mysore Government recognize the necessity for the expansion of the co-operative movement in directions other than agricultural credit. "There is great need for the expansion of agricultural societies. The Co-operative Department should work hand in hand with the officers of the Agricultural Department and make the co-operative societies distributing centres for seeds, manures, ploughs and other agricultural instruments, and in sericultural districts for the supply of disease-free seeds as well. There is also great need for the expansion of the movement amongst petty traders and artisans." There is plenty of scope in these directions for the number of societies in Mysore which deal with non-credit forms of co-operation is only 141 or less than one-ninth the number of credit societies, though this is a proportion which compares favourably with most other parts of India. 72 of them are supply societies, the object of which is the supply to their members of good seed, implements and manure. Their activities in the two latter directions were very limited, as regards manures mainly because ryots have yet to appreciate the advantages of using them but also because prices are high and as regards implements because they were not available. But they, as well as seventy credit societies, did good work in supplying seed, mostly the seed of the improved variety of ragi recommended by the Agricultural Department. It is interesting to note that a beginning has been made with a branch of co-operation which is as important as joint supply, namely joint sale though it is even more difficult to get it going in India for, as the Registrar points out, it has yet to be seen whether the members of the societies of which there are now five in Mysore, two for the joint sale of areca and three for that of paddy and copra, will show the loyalty, business-like habit, and combined action which are necessary for their success.

The 43 weavers' societies are shown under non-credit societies though it would seem that they do not yet all fall in that category. Originally organized purely as credit societies, their constitution has been entirely changed and their principal object is now the supply of yarn, dye stuffs and raw materials, the introduction of improved patterns and up-to-date tools and implements and the joint sale of finished products. 25 out of the 43 societies are now working on these lines. They are finding their chief difficulty in the joint sale for the usual reason. When the market is good, the weavers prefer to sell their goods themselves. When it is dull, they dump them on to the societies. However, the societies made a total profit of Rs. 19,800 or some Rs. 3.36 lakhs worth of things sold though of this one society, the Bangalore City Weavers' Co-operative Society accounted for nearly one-third.

We look forward to a more stimulating report next year. The restriction on touring has, we trust, been removed ere this and this, together with the efficiency of the Report of the Co-operative Committee, should mean the embarcation of the Mysore Co-operative Department on a new era of rapid progress.

Seville International Road Congress.

The growth of motor transport during recent years and the realization that developments of the first importance are impending have raised the new considerations in connexion with road design, construction, and maintenance, have created fresh problems on the financial side, and have thrown upon the vehicle designer and the traffic expert tasks of an onerous character if full of advantage is to be taken of the new transport system. It has become clear that the road systems of the world, designed for the requirements of horse-drawn traffic, are inadequate for the needs of mechanically propelled vehicles, and that practically all existing highways must be reconstructed and a large mileage of new roads provided.

It is an opportune moment, therefore, at which to hold the Fourth International Road Congress which met at Seville recently and it is not surprising that many countries were represented by Government delegates, municipal authorities, tranport interests, and others associated with the development of road traffic. Great Britain, America, Canada, France, Italy, Belgium, the Netherlands, Sweden, Denmark, Switzerland, Czecho-Slovakia, Argentina, and, of course, Spain are represented and advantage was taken of the occasion for a frank interchange of opinion on many aspects of the roads question which make a common appeal. Prominent British delegates included Sir Henry Maybury, Colonel Bressey, of the Ministry of Transport, Mr. J. S. Killick, Mr. John Brodie, the City Engineer of Liverpool, Mr. A. Dryland, Country Engineer of Middlesex, Mr. E. S. Shrapnell-Smith, representing commercial motor interests, Mr. Arthur Collins, Mr. A. E. Brookes, Mr. F. Pick, London Underground Railways, and Mr. Rees Jeffreys and Mr. A. E. Cave. The Congress was convened by the Permanent International Association of Road Congresses, which body has continued the work initiated at the first congress held in Paris in 1908. Its activities are not confined to the organization of recurring congresses in different countries, but include research work on an international basis in laboratories, tests carried out on roads, and the publication of reports on the many matters connected with roads and road traffic. The membership of the Association is open to representatives of Governments, public departments, commercial and municipal bodies, chambers of commerce, scientific and technical institutions, transport companies and commercial firms.

Concrete Roads.

The reports presented from various countries on the subject of concrete roads show that there has been a rapid development in this method of construction. While in British practice this type of road has not yet been adopted to any large extent, in the United States, Canada, and in European countries generally it has found considerable favour. For highways which have to accommodate heavy traffic there is general agreement as to the advantages of surfacing with concrete. In Great Britain this type of construction has been tested for parts of the new arterial roads in London area, on sections of the Great North Road, and for roads giving access to Avonmouth Docks from Bristol and in the Southampton dock area. The conclusion drawn from experience, which, however, has not yet emerged from the experimental stage, is that for entirely new roads, or for the reconstruction of existing roads, the results obtained from concrete justify further extensive trials. It is not thought that the efficacy of reinforcement in eliminating or reducing cracks has been clearly demonstrated, but a definite opinion is expressed by British road engineers that the cracks formed by expansion and contraction of concrete through temperature, moisture, and subsoil changes cannot be avoided by the provision of expansion joints. The case for surface-tarring concrete roads is not held to have been proved.

In the United States, where the first concrete was laid in 1892, there are now about 62,000,000 square yards of these highways. There are wide divergencies, states the report on the subject, in the details of construction, design, and materials used. Expert opinion in the United States, as in Great Britain, is that the advantages of reinforcement have not yet been fully established, and that there is no good case for the use of joints in concrete pavements. Statistics which have been compiled on the subject of maintenance costs indicate that the figure is low.

Methods of Reinforcement.

A special report on reinforced concrete methods of construction suggests that the use of reinforcement becomes economical only in those cases where the plain concrete pavement six inches thick is not strong enough to carry the traffic, and in such cases its cost must be balanced, for economical design,

against the cost of additional depth of concrete which will give the plain concrete pavement the required strength.

Reinforcement in America takes two forms; first, the use of bars in circumferential and corner reinforcement; and second, reinforcement over the entire area of the pavement.

The advocates of circumferential reinforcement hold that by dividing the concrete slab into comparatively narrow strips no reinforcement is required against longitudinal cracking. In such a style of reinforcement it is the usual practice to use two one-half inch or three-quarter inch bars about six and twelve inches from the edges of the pavement and joints respectively, these roads being usually placed at a depth from the surface of one-half the total depth of the pavement.

Advocates of the top reinforcement are divided between those in favour of light and heavy reinforcement. Light reinforcement advocates are in favour generally of a mesh placed about two inches from the top of the pavement, this mesh being insufficient to give the pavement any particular additional strength, but being heavy enough to hold the adjoining sections together if cracking occurs. The amount of steel recommended in such cases is generally about four pounds per square yard.

The advocates of the heavier type generally favour the use of a heavy mesh or bars amounting to about ten pounds per square yard, placed about two inches below the road surface, their contention being that this amount of steel will serve to hold adjoining sections together if cracking occurs, and prevent movement, at the same time materially increasing the strength of the pavement in beam action.

Advocates of the type which includes both top and bottom reinforcement generally favour what is commonly known as "bird cage" reinforcement, the "bird cage" being constructed of longitudinal and transverse rods placed about one inch from both top and bottom surfaces of the pavement and supported on the subgrade. The amount of steel in such a design is generally about twelve pounds per square yard.

A considerable mileage of concrete roads is now being constructed in Canada, and a report made by Mr. Gordon Grant, Chief Engineer, Highways Branch, Department of Railways and Canals, is to the effect that the construction of this type of road will exceed all others as soon as cement can be obtained at pre-war prices. There are now approximately 650 miles of concrete paved highways in Canada, and the results obtained are claimed to prove that such roads are not adversely affected by the extremes of Canadian climate with a range of 120 deg.

Special Systems of Surfacing.

Systems in which concrete with rich mortar is used are favoured by Continental engineers. These include "soliditit," "rhoubenite," and "elastite". Of these the only one of which there is any extended experience in Belgium is rhoubenite. In this system the inventor has aimed at obtaining impermeability and elasticity by making use of a neutral medium in the form of pulverized sawdust which is capable of spreading itself uniformly through the mass of concrete at the moment of mixing. With the sawdust is incorporated a special tarry mixture, but the exact proportioning and the temperature at mixing of the powder remain the secret of the inventor. The concrete when brought to the working site is spread out in a layer $4\frac{3}{4}$ in. thick, so as to give after ramming, which is done by hand by means of square iron rams or by a light mechanical roller, the required thickness of four inches. Two or three weeks are required for the complete setting of the concrete.

Experience in France with soliditit and rhoubenite has been satisfactory. In the first-named system the material is employed in either one or two-layer applications. In two-layer roadways there is a lower layer of concrete of ordinary cement and an upper layer of soliditit which is formed of portland cement to which is added a product rich in free and active silica. Trials have been carried out at Lyons, in the department of the Alpes Maritimes, and in the department of the Rhone, and although it is too early to express a definite opinion regarding the value of the system, it is stated that it gives an even continuous surface like asphalt or wood, but with a slight roughness, so that it affords an excellent foothold for horses. Experiments with rhoubenite have been on a more extended scale. The cost of this last-named system is said to work out at about 37ft. per square meter, not including the preparation of the bed.

Bitumen and Asphalt.

Eight reports were presented on the subject of bitumen and asphalt surfacing. That dealing with practice in Great Britain in the joint work of Mr. J. S. Killick, late Chief Engineer of the Roads Department of the Ministry of

Transport, and Mr. T. G. Marriott, the Technical Director of the Limmer and Trinidad Lake Asphalt Company.

It is pointed out that asphaltic road surfaces have found much favour since the termination of the war. Until a comparatively recent period specifications for such surfaces were confined within very narrow limits, but modern practice has extended, with the result that those responsible for highway maintenance have now a considerable choice, and are in a position to specify an asphaltic pavement suitable for particular needs. Keen technical research is being applied on all sides to the question of suitable aggregates and specifications of forms of construction and methods of laying two-coat asphalt macadam are now drawn up by road authorities.

The use of bitumen of either the Trinidad or Mexican variety is extending. Upwards of five million yards of road in Great Britain have been laid with Trinidad asphalt. The reinforcement of tar by means of added bitumen is now the subject of numerous experiments, and an important branch of road engineering is likely to be established as the outcome of this work. The aggregates in use in bituminous construction in Great Britain are for road bases, for wearing surfaces, for use in asphaltic concrete, and as fillers, and it has been shown that aggregates which the untreated condition are friable and readily broken resist disintegration when treated with bitumen of suitable quality. This is particularly noticeable in the case of clinker, sandstone and flint, and the effect is to lessen the cost of production of the base mixture. Considerable attention has been given to the evolution of a suitable single-layer asphalt mixture. A wide range of work has been carried out in this connection, and the opinion is expressed that a definite formula will be evolved which will enable a suitable one-course pavement to be adapted for the purpose of surfacing main county roads in Great Britain.

Road-Making Appliances.

The changes, which the machinery used in road construction has undergone in Great Britain with the development of mechanically propelled traffic, were discussed in a report by Mr. A. E. Brookes, Engineer and Surveyor to the Durham County Council, and Mr. Arthur E. Collins, City Engineer of Norwich. Machinery for the manufacture of tar macadam may be either portable, for manufacture on the road side, or fixed, for manufacture at a quarry works, or depot. Essential features in both types of machinery are efficient drying units which will ensure, not only that the aggregate is raised to the proper temperature, but also that all moisture is driven off. The most efficient method of drying is considered to be that of the heated floor, but as it is not mechanical it is too slow and expensive. Experience in the treatment of cold blast slag for the manufacture of tar macadam at a fixed plant indicates that as regards both high thermal efficiency and solidity of construction the double cylinder type of dryer is to be preferred.

"The Aero" concrete mixer is stated to embody a new principle as applied to concrete mixing. In this machine the cement is blown upon the damp aggregate as a cloud of dry cement instead of the usual dry mixing followed by wet mixing being adopted. The particles of aggregate are separated before falling through this cloud to ensure access of the cement on all sides of each. The application of this principle, according to Mr. Collins, enables equally good concrete to be made with less cement than by any other method now practised, or better concrete with equal quantities of cement. In the latest type of this machine the capacity is four to five tons per hour. It is self-propelling on a caterpillar track; a turntable intervenes between the chassis and the machine proper, and this, coupled with a turntable-mounted delivery shoot, enables rapid delivery of concrete over a large area of surface to be effected without moving the machine.

Before 1913 little if anything was heard of the application of loading machines to road works; but they are now being used by many road authorities. One machine used at Norwitch will load road shingle from a pile into a cart or motor waggon at the rate of about a ton a minute from the time it starts. Allowing for manœuvring of vehicle to and from machine, from five to eight minutes are required for filling a one-ton cart and twelve to fifteen minutes for a four-ton motor waggon.

American Practice.

The American report contains ten independent contributions and covers a wide field.

Blade graders have been in use for road building and maintenance in the United States for many years, and large graders are now being used which require tractors of from 20 to 50 h.p. There has been a marked development during and since the war, in the use of mechanical road material loaders of

either the bucket and endless chain or the belt elevator type. Developments in the first type consist of serrated or toothed loading edges for the buckets and of automatic feeding devices at the loading end. Many loaders are now mounted on caterpillar tractors, and can be moved under their own power. A newer machine is a combination bucket and belt loader.

The transport of raw materials is an important factor in the cost of road building. This item has been lowered by the development of the narrow gauge industrial railway. The common gauge of these lines is 24 in., and they are laid with 15lb. to 25lb. rails. The most satisfactory size of locomotive is the six-ton, and petrol engines are now displacing the coal fired steam locomotive. It is possible to convey materials on these railways at a cost of 7½ cents per ton mile.

For road excavation work an increasing use is being made of small hammer rock drills and small compressed air machines. The all-hammer drill has, of course, been evolved from the pneumatic rivetor. The auger drill, the bit of which cuts the rock like an ordinary hammered bit but removes the chips, is a recent development. For deep drill holes in road excavation the old percusion type of drill remains the favourite tool, but much improvement has been made in the details of design and in the quality of the materials used in construction.

Much improvement in rock and gravel crushing and screening plants has been brought about in recent years by more economic design and arrangement of the plant equipment to meet variable conditions and requirements. The use of electricity in operating plants is increasing. American experience is that drilling as well as pumping is done more cheaply by electric power than in any other way. Electrically operated pumps, with motor and pump combined in one unit, and the use of the motor to operate the screens in large plants, are very efficient and satisfactory.

The almost universal use in large plants of the steam shovel, with tract or caterpillar traction, in loading cars in the pit and quarry is one of the greatest evolutions in the production of stone and gravel. The cable line and dipper is still the most common way of taking gravel from the water in land plants. The front continuous dump dipper is a recent development. It has a decided advantage over the rear dump dipper, which takes time in closing and sometimes fails to close. The pumping of gravel from deposits not too highly cemented together is practised extensively, and the water for use in cleaning and sorting is carried along with the gravel.

Clean stone and gravel aggregate of small size, free from dust, a great amount of which is used in bituminous and cement concrete work, is produced to a greater extent than hitherto in dry plants by the use of the shaker or vibrator screen. The screens are vibrated by a cam or by a tapping vibrator operated by electricity. They make it easy to remove the dust from limestone.

The distribution of bituminous material by hand-pouring and by machines with a gravity flow has been largely abandoned in favour of machines working under pressure. The greatest development in distributors since the last congress has taken place in the motor truck type. Motor truck distributors are made with tanks from 800 to 1,000 gallons capacity. It is possible with most makes to fill the tank of the distributor from tank cars by the equipment which develops the pressure so that an additional pump for this purpose is not always required.

Motor Transport.

One of the most interesting reports to the traffic section of the congress was that by Mr. Frank Pick of the London Underground Railways, who is responsible for the operation of a large fleet of motor omnibus and passenger vehicles.

He reminded the congress that from 1900 to 1914 the advance of motor transport was steadily continuous, and then the war came. The movements of men and munitions, especially in the war areas, were beyond the capacity of the railways, and recourse was had to the roads. A net work of 4,000 miles of roadway behind the English lines was kept in constant repair and added to by the hundred miles in the year. Over 450,000 road vehicles were sent from this country into France up to the Armistice, and it is estimated that from 180,000 to 200,000 motor vehicles were in use at one time for the support of the Allied Armies on the Western Front, performing up to 10,000,000 ton miles in a day. The commercial motor passed through this period of fierce test, approved and accepted, and motor road transport was established as securely as railway transport.

Unfortunately the sudden development of road transport came, states the report, when the roads were in a bad state owing to the accumulated neglect of five years of war,

The Roads Department, however, has now succeeded in classifying the roads, establishing standards of construction and maintenance and not only overtaking the arrears of the war years, but embarking upon extensive schemes for building new roads and improving old ones. There is therefore an immediate prospect of the roads being made fit for the traffic, which accordingly will be operated not under the restrictions as to weight and speed now current, but under much more liberal conditions within the reasonable limits of strength and durability possible in well-designed and well-constructed roads.

Yet when the network of the roads is perfected, one more defect must be remedied to complete the organization of road transport. Suitable terminal facilities must be provided. Steps have been taken to establish at pleasure resorts depots which may serve as a station for passenger traffic and as a receiving or distributing office for goods, but so far the provision is scanty, the vehicles are usually parked somewhere in the public streets. The recognized haulage contractors have dealt with their own requirements, but the swarm of minor proprietors have not, particularly where they are engaged in the long distance passenger business. That more must be done for the comfort and convenience of road passengers is generally accepted, and it would seem as though the requisite accommodation would have to be secured by the formation of separate companies to develop the terminal or station facilities desired, the motor vehicle of any owners being allowed to make use of them on a rental basis.

Position in the United States.

The situation in the United States was dealt with in a joint report to which sixteen different authorities on various aspects of the subject have contributed.

The following figures by the National Automobile Chamber of Commerce give some idea of the magnitude of motor transport in the United States in 1921. The ratio of motor vehicles to population ranged from approximately five persons per motor vehicle in California to twenty-eight persons in Alabama; passengers carried numbered 6,990,862,000; number of passenger miles 70,820,000,000; tonnage carried by motor trucks 1,430,000,000; ton mileage credited to motor trucks 6,479.2 millions.

The remarkable improvement of American highways is bound as is asserted, to have a far-reaching effect upon transportation. The modern motor vehicle will prove the solution of the railway terminal problem. The delivery of freight from warehouse or factory to cars, and from car to consumer, so far as it applies to long-haul traffic, and delivery from farm to railroad in the ruarl districts, will prove a direct and great benefit to the railways and extend their sphere of influence. Undoubtedly the motor vehicle is destined also to relieve the railroads of much of the short-haul less-than-car-load freight which is in the main unprofitable. There must necessarily be a large amount of investigation as to costs of operation and costs of maintenance of the motor vehicle, a more thorough analysis of rail-road short-haul costs, and a much more complete solution of the problem of taxation of motor vehicles for raising funds for construction and maintenance of highways, before a definite solution can be reached of the great and pressing problem which involves the relationship of the railways, the waterways, and the highways.

In analysing markets and estimating the cost of transportation and distribution, American manufacturers, jobbers, and shippers are now taking motor transport into account and it is estimated by transportation students that within ten years four-fifths of all freight transportable by motor truck for all hauls within seventy-five miles will be taken over the high ways.

Artificial Wood.

Artificial wood—lacking somewhat in tensile strength, but useful for a great variety of purposes—is a product into which a recently patented process is expected to convert a portion of the 20,000,000 tons of corn-cobs that have been included in the annual waste of the United States. As stated by "Everyday Science," the cobs are ground, saturated with water, and in a closed vessel cooked for half an hour to two hours at 120 deg. to 160 deg.C. The liquid being then pressed out, the fibrous mass remaining mixed with some suitable binder, is given any desired shape in moulds, or is rolled into sheets to be worked like lumber. The liquid is evaporated, and the dissolved colloidal matter is concentrated into an excellent adhesive.

The Ideal Homes Exhibition, Olympia, London.

By Mr. H. Alderton, Superintendent, Chamarajendra Technical Institute, Mysore.

That this exhibition is truly olympian and ideal in everything, except the weather condition, is attested to by the immense crowd of gods and mortals which throngs its precints daily.

The fact of this eager and anxious crowd is a sign of the tunes directly contradictory to the view of modern life presented by the daily newspapers, which publish little else beyond the sordid rays of divorce and uncongenial sex problems. According to such view the most remote necessity or desire of man's modern existence is a "home," even if the necessary building could be obtained; the trend of public desires as exemplified by the attraction of 'Ideal Homes' is most definitely otherwise. The chief attractions may be classified as follows:—

1. The ideal building with full size and also scale specimens, plans, possible substitutes, easy payment propositions and advice, etc., new building materials.
2. Ideal furnishing for the interiors, with many rooms of tastefully arranged and luxurious furniture.
3. Ideal exterior surroundings, with actual and landscape gardens with accessories, seeds and plants.
4. Ideas for ideal domestic life demonstrated by labour-saving devices.
5. Ideal necessaries of life, exemplified by numerous food demonstrations.
6. Ideal games and amusements to banish the monotony of existence consequent upon the use of all labour-saving devices.

It is proverbial how the most enthrallingly ideal bungalow in the abstract becomes most bare and inartistic upon realization in brick or stone, disappointing and disillusioning the 'castles in the air' of the many young building enthusiasts. The smaller exhibition court consists of very tastefully designed and actually built bungalows, most conveniently ideal and also real. They further delight the envious beholders by the beautifully laid out verandahs, gardens, fire-courts and accessories in the way of sundials, bird baths, fountains, quaintly-cut-box hedges and rockeries, rustic furniture, etc.

Upon closer inspection the interiors are found to be exquisitely furnished to the smallest detail which may be demanded by elegence, luxuriance, and lastly but not least, practical convenience and entire comfort and satisfaction.

One enterprising guild carried their ideal building still further by the addition of two further ideals. First a real nursery with furniture, not adapted from adult size, but made to the children's size, with specially designed decorations making the room a fairy wonderland of delight for the little ones. Outside was a real kitchen-garden with growing vegetables large and small and the alluring attraction of a crowd of fluffy little ducklings, newly hatched, and under the watchful care of a rosy-cheeked country girl. It is difficult to describe the sensation caused by these whilst the cold drear snows of winter fell outside the exhibition.

Further afield were found lowing kine waiting for the milking demonstrations by ideal machinery; all kinds of ideal poultry, with demonstrations and assistance, offered to meet all the exigencies and intricacies of poultry rearing. It is interesting to note that one brainy inventor realizing the necessities of constant and congenial employment for the continuance of a happy and contented state of mind, has devised a receptacle for the chickens daily food supply, from which the chicks, by their own energy, distribute an occasional shower of grain. In continuation of the home gardens idea are the exhibits of apiaries with special breeds of live beas, flowers and fruit-trees and bottled-fruits and even piggaries, under as ideal conditions as it is possible for the filthy swine to attain.

Many interesting ideas were demonstrated to obviate the still acute and urgent housing problem and the high cost of all building material and labour.

Foremost among these was the super caravan and the 'Flatavan,' a double room on wheels and built of wood framing and canvass over a strong motor lorry chassis. It was completely fitted up with every necessity, kitchen, water house, bath in the floor, library, flower garden and very possible want down to the wireless apparatus for "listening in" to concerts. Somewhat similar was the motor trailer, consisting of a small furnished room on wheels which can be attached to any ordinary motor car, completely fitted up complete for Rs. 1,500, these ingenious ideas offer the delights (?) if holiday travel without the necessity of hotel accommodation. Would

this not be just the very thing for inspecting officers of Government ?

The "Vi-board" Bungalows Co. specialise in building material and also in bungalows showing ingenious inventions for economising space, and devices to do away with the drudgery of house work, whilst preserving the three essentials; light, air and convenience. The beds are fitted in somewhat like ships bunks but with added size and comforts, and by clever arrangements of doors space is added to either the bedroom or living room as required a "back to back" grate warms the living room and also the oven of the kitchen and the water supply. Violeum, one of their specialities, is a floor covering which needs no scrubbing or mats and retains its brilliant polish.

Another firm specialise in the American idea of "built in" furniture for space economy and convenience.

A heat-resisting and weather-proof composition made from the waste of the timber trade in Canada is utilized in large thick sheets, ready-shaped to make large circular rooms, this board substitute is extremely light and its non-conductivity of heat coupled with the "dead air space" in the roof render it perfect for tropical climates. Photographs of whole villages built with this material in Kenya colony were shown.

The great advance shown in the comfort and elegance of all classes of lighting effects: electric, gas, petroleum, petrol, acetylene and other patent preparations in highly 'illuminating,' the up-country patron is placed upon equal conditions with the town resident with small individual plants for one house at very moderate charges for installation. For softening and disfusing the light and creating artistic effects the majority depend upon adaptations of silk and painted silk shades or globes in a great variety of artistic shapes. All varieties of glass and alabaster are also greatly used with very beautiful effects especially for 'reflected' lighting.

The 'domestic science' section consisted of specially prepared and adapted food stuffs and methods, demonstrations, of cookery, domestic labour-savers, varieties of washing machines, vacuum cleaners, electric appliances and apparatus to supersede the obnoxious business of washing dinner and tea services, form in large separate section. One unique feature was a lady's secretaire, fitted up with every necessity for preparing and serving tea or coffee either in the office or drawing room.

The larger exhibition hall was entirely filled with a bewildering multitude of beautiful decorations, furniture and fitments for the ideal homes. Nothing which could possibly add to the comfort or luxuriance was forgotten.

The modern trend of design is decidedly towards luxuriance and ease, quiet harmonious colours and elegance of shape. "Period" furniture forms the bulk of the manufacture, and shows economy of material in lightness carried even to the verge of fragility. The cheaper imitations are of stained wood, but on all furniture the fashion is a dark stain to imitate age. Upholstery is greatly in vogue, an imitation leather natural exactly resembling antique leather is greatly used for covering and being acid, oil and water-proof, in addition to being cool and insect-proof is well adapted to our Indian conditions.

To reduce the high costs of manufacture, many substitutes and imitations, often very ingenious, are offered. Particularly is this so in regard to woodwork and generally consist of plastic compositions comprising a sawdust body. Of this latter class a whole room was exhibited, with moulded and deeply carved panels, the furniture was also prepared from this composition. This was such an extremely close imitation of antique oak that it could only be detected from the genuine article by an expert and samples of composition were shown to convince the general public. Sawdust and fibres, even with the advent of the sawdust stove, is still a glut upon our Indian markets and with it lies a fortune for any industrious investigator.

One firm exhibited composition oil paintings generally consisting of copies of old and modern painters. These even produced the glistening surface and the ridges produced by the oil brush strokes and the backing of canvass upon the orthodox fame comprised an extremely faithful reproduction. They were not only extremely cheap but can be rolled without damage for export, minus the frame.

A stall with many shelves all full of similar electric clocks each with its own electric accumulator and guaranteed to need no attention, not only the dials recroded exact time but all the pendulums swung together in exact rhythm and seemed to exemplify the aim of the present age—the entirely automatic machine to entirely supersede all labour.

Of particular interest to all residents in India is the new tennis "substitute", the 5—10 game. It is ideal as meeting the tennis player

demand for an "all weather" and "all the year round" intensive and rapid practising medium and has the tremendous advantage that it can be played with from one to six players in spaces varying from $\frac{1}{6}$th to $\frac{1}{2}$ the usual area of the regulation tennis court and can therefore be played in a large room during the dreary time when monsoon conditions prevent out-door play. In addition to the well-known tennis game and scoring, there is also a variation game of "one hundred up".

The latest craze which at present holds all London in its grip is amply illustrated by the extensive display of wireless apparatus, particularly that part which deals with the "listening in" to the new broad-cast concerts from Marconi house, consisting of: Daily news, public speeches, theatres and music hall programmes and exclusive sections for ladies and also children which is available to any one at any time with simple apparatus and a length of wire. It is rumoured that 'broadcasting' will be organized in India in the near future and it therefore behaves all residents to sit up and take notice of this original and inexpensive pastime.

After a visit to the Ideal Exhibition he must indeed have a brazen heart who would contest the fact that "everyday in every way we grow better and better."

Profit-Sharing in Norway and France.

Writing in the official organ of the International Labour Office, on the much-discussed subject of profit-sharing, Mr. K. F. Dahl, Judge of the Supreme Court, Christiania, observes that the growth of the Labour movement in Norway has proceeded side by side with the rapid industrial development which has taken place in the country since the end of last century and has become increasingly important, alike from an economic, social and political point of view. In 1918 the demand for the appointment of a Royal Commission to investigate the question of profit-sharing and workers' control figured in the election programmes of all the bourgeois parties and was complied with by the Government at the end of that year, the Labour Commission set up at that date completing its work last autumn. Profit-sharing on a voluntary basis has not been widely adopted in spite of many years of propaganda in its favour. According to investigations made by the Commission, the number of firms in all countries which have introduced and still operate a scheme of profit-sharing cannot be estimated at more than from 300 to 400. In Norway schemes have been introduced in 28 undertakings in all, though only in 18 in the system still in force; but of the 12 members of the Commission, eight have submitted a Bill recommending the establishment of compulsory profit-sharing in certain classes of undertakings. Their reasons are three-fold—ethical, economic and social. They prefer the profit-sharing system to any other method of remuneration "(1) because it is more just; (2) because it results in a more even and productive distribution of the profits of production and tends to increase the productivity of the undertakings; (3) because it creates a better understanding between capital and labour."

Objections to Compulsion.

The majority feel that in the light of experience profit-sharing on a voluntary basis cannot be regarded as likely to make any considerable headway and that, therefore, as a measure of social reform it must be made compulsory. Three main objections are usually advanced against making profit-sharing compulsory: (1) That compulsion is a violation of economic liberty; (2) that, under a compulsory system, there is no guarantee of the good-will, which is necessary on the part of employers and of workers; (3) that compulsion is incompatible with the necessary adaptability to the special conditions prevailing in each individual undertaking. With these objections we quite agree. Profit-sharing, when a spontaneous expression of the good spirit prevailing between employer and employee—as in the case of one concern at least, of which we happen to have intimate knowledge—or where freely offered by an employer as an inducement for more thorough co-operation on the part of the employees, seems a quite excellent and commendable arrangement—but only so. France, by the way, is just now making an official inquiry into the subject, the Minister of Labour having recently requested the Standing Committee of the Superior Labour Council to place the question on the agenda of the next meeting. The Standing Committee accordingly drew up a long questionnaire which was communicated to all employers' and workers' organizations concerned, replies to reach the Directorate of Labour not later than Tuesday last.

Cotton Growing in the Empire.*

The values of cotton have fluctuated a good deal during 1922, the lowest price for fully middling American being 9½d. per lb. in February and the highest 15.62d. in November, and during the greater part of the year prices have ruled on a higher scale than in 1921. The actual number of bales marketed by the Association in 1922 constituted a record, and the value of the cotton was higher than in any previous year, with the exception of 1920, when exceptional prices were ruling. The quantity of cotton which has passed through the hands of the Association during the past six years is shown in the following statement :–

Year.	Bales.	Value. £
1917	39,191	1,415,644
1918	29,190	1,410,837
1919	30,881	1,494,921
1920	23,513	1,699,144
1921	63,966	1,597,702
1922	67,386	1,628,778

The Council are pleased to be able to present a satisfactory financial statement, and, after making full provision for depreciation, also for income-tax and corporation profits tax, the accounts show a surplus on the year's working of £33,008 2s. 4d., which increases the excess of income over expenditure to £59,522 0s. 2d. This result has been brought about by careful management of "hedges" and by the close attention which has been given to the marketing of the cotton under the most favourable conditions.

Owing to the necessity of reducing the buying price during 1921, as compared with the very high prices which were possible in the previous year, it was only to be expected that the native cotton-growing industry in some colonies and protectorates would suffer a setback, as it is difficult for the natives to understand fluctuations in values ; especially has this been the case in the Southern Provinces of Nigeria and in Uganda, where the fall in production was further accentuated by unfavourable climatic conditions. The estimated amount of cotton grown in new fields in the British Empire during the last six years is as follows (stated in bales of 400 lbs. each) :— 1917, 72,600 ; 1918, 54,900 ; 1919, 79,600 ; 1920, 105,800 ; 1921, 165,100 ; 1922, 103,400.

* Extracts from the Report of the British Cotton Growing Association for 1922.

India.

The following extracts are taken from the reports of work in the various cotton growing regions :—

The new company referred to in the annual report for 1921 has been registered in India under the title of "B. C. G. A., Punjab, Limited," and is operating the lease of about 7,500 acres of land near Khanewal in the Montgomery District of the Punjab Province. The land is irrigated by the Lower Bari Doab Canal, the rainfall being under five inches. The estate is being conducted as an object lesson for the growing of improved types of cotton and the better cultivation of crops generally, and is serving a most useful purpose in this respect, as the Indians in the neighbourhood of the estate are copying the methods of cultivation and asking for the improved type of cotton seed. The crops being grown on the farm consist of 2,500 acres of wheat, 1,900 acres of cotton, 700 acres of pulse, and other food crops. The cotton crop has proved very successful, and some hundreds of bales of improved cotton are to be sent to this country for sale.

Sudan.

The four estates in the Gezira Plain, which are managed by the Sudan Plantations Syndicate, Ltd., produced a total crop of 11,386 bales of 400 lb. each, as compared with 4,567 bales from three stations last year. The new station at Hosh, where 6,040 feddans were under cotton, yielded a crop of 5,927 bales. A further pumping station is being erected at Wad el Nau, and in July next it is expected that there will be an additional 10,000 feddans of cotton under cultivation. The negotiations for the completion of the work on the Makwar Dam have been successfully carried out during the year, and a contract has been secured by the eminent firm of Messrs. Pearson & Sons, in whose able hands the work will now be brought to a final and speedy conclusion, and, if all goes well, gravitation water should be available for the Gezira Plain in 1925. The area under cotton this year in the Gezira is 10,000 acres, which will be increased to 20,000 acres next year, and this will be further increased to 100,000 acres as soon as possible after the gravitation water arrives.

Arrangements have been made for the early construction of a railway to Kassala, and a

concession for growing cotton is to be granted by the Sudan Government to the Kassala Cotton Co.; this concession is to be very much on the lines of the old Gezira agreement, thus establishing a three-cornered partnership as between the Sudan Government, the native cultivators, and the Kassala Cotton Co. The Association have arranged to subscribe for £20,000 debentures and 20,000 1*s.* ordinary shares in the new company. The Kassala area is flooded each year by the River Gash, which waters from 80,000 to 200,000 acres annually; the volume of water is uncertain, and it is not possible to store it, and the intention is to make use of all the water possible during the years of large flood and average it in years of small flood. The soil is rich and the climate suitable, and it is anticipated that in course of time 60,000 to 100,000 bales of excellent cotton will be produced in this district. On the completion of the Kassala Railway another cotton growing proposition at Gadaref becomes a possibility; the area is extensive and well populated, and quantities of rain-grown cotton of good American type have been produced, but development has been hampered by lack of transport facilites.

Excellent cotton of the Sakellarides variety has been grown for the past two years at Tokar, where the conditions are somewhat similar to Kassala, the land being irrigated by the River Baraka. Over 20,000 bales have been grown in this area, and, by conserving the water during times of big floods, probably twice this quantity might be obtained. The soil is excellent, and, after the flood, the seed is planted, and in some cases no further cultivation is necessary.

Irak.

Although a policy of marking time has been adopted in connection with the Association's operations in this country, the cotton growing industry in the Baghdad District is making steady progress. The yield of 1921 was disappointing, but for the current year the production is estimated at 350 bales, the quality of which is very satisfactory. Judging from the demand for seed for planting, a greater interest is being taken in cotton cultivation, and the prospects for the coming season are very promising, the lowest estimate being 1,000 bales. In the past the cotton crop has suffered from the lack of an adequate water supply, but a system of "passes" has now been instituted, which is working satisfactorily, and should result in every planter receiving an ample supply of water.

Glass and Bangle Industry in Madras.

For some time past it has been urged in the Legislative Council that glass industry should be developed in this province. Experts have declared that manufacturing glass on a commercial scale and on economic basis is an impossibility considering the high temperature required and the cost of fuel. It was, however, agreed that bangles could be made in our province and that the bangle industry could be developed. But the reports received by Government so far are very discouraging both for pioneer enterprise by State and for assisting private enterprise. Before abandoning the idea the Development Minister is consulting some of the members of the Legislative Council by means of the following questionnaire inviting their replies and suggestions :—

1. Is there any indigenous bangle industry in your district ?

If so, in what place or places ?

How far does it supply ?

What is the raw material used and what is the nature of the process employed ?

Are you aware of any places in other districts where the industry is going on ?

2. Are you in favour of developing the bangle industry in this province ?

If so, what is the sort of action Government may be expected to take to do so ?

3. Are you in favour of developing the indigenous industry or encouraging factory industry as the only way to compete with cheap Japan made bangles ? In the latter case don't you think that the indigenous industry will suffer and the few that are making a living on it at present would be deprived of their profession ?

4. Are you aware of any young man of your province who has studied anything about the manufacture of bangles ? If so, please give his name and address. If not, are you in favour of sending out a young man to Japan for being trained there ?

Do you know of anybody who is willing to invest any money in an enterprise of this kind and to take advantage of the provisions of the State Aid to Industries Act ?

Fundamentals in Education.

The dismay of the president of the Carnegie Foundation for the Advancement of Teaching at the discovery that the United States was spending about a billion dollars a year on public education in the year of our Lord nineteen hundred and twenty is superficially an occasion for mirth, says the "New Republic." The report that most naturally occurs to mind is the flippant query: "Ain't it awful?" A billion dollars that might have gone for battleships or to increase the army, or for tobacco, or to increase the efficiency of the boot-legging industry, or to supply needed capital for the equipment of railways has gone into teaching millions of children. Think of it! We have been living heedlessly, recklessly in this era of unparalleled educational extravagance. The average citizen has gone about his business without once "viewing with alarm" this evidence of our entrance upon an insidious downward course. If he had known that educational expenditure had risen seven hundred per cent while national income had increased only a paltry five hundred per cent, he might even, in his thoughtless way, have "pointed with pride" to this proof of interest in our public schools. Now he knows better.

The condition of affairs is made still more ominous by the fact that while the increase in attendance in the elementary schools has about kept pace with the growth of the population, the high school population has increased a thousand-fold. Children aren't leaving school to go into shops, offices, factories and farms at the age of twelve or fourteen anything like as much as they used to do. If this keeps on (and if immigration continues to be restricted), who is going to do the hard, rough and dirty work of this country? Already more and more youths are insisting that they want a college as well as a high school education. Well may we ask; "Where is this going to end?"

To say that the remedy for the existing congestion of studies and existing uncertainty of aim and method is to contract the curriculum, to confine it to the few things regarded by Messrs. Smith, Jones and Pritchett as "fundamental" is to shirk one of the most difficult intellectual problems that exists today: the development of a curriculum at once rich and unified.

The report says that "in no country in the world does so large a proportion of the energy of the teaching profession devote itself to the tedious task of lifting ill-prepared children and youths through courses of study from which they gain little or no good."

There is a problem of discovering studies and methods which will be adapted to the multitude of individual children and youth from all classes of society who now go to school. But to President Pritchett there is no genuine social and intellectual problem in this state of affairs; no question for continued experimentation and hard intellectual work. The whole affair is already diagnosed; the schools are "overcrowded". The remedy is already known: fewer children should go to school.

It is generally admitted that the twelve years of the elementary and secondary schools naturally divide into periods of six-and-six. Theoretically children would finish the first period at the age of twelve. But make it fourteen years of age. We pray the reader to call up in imagination as many actual children as possible of the ages from twelve to fourteen. Then let him imagine that the schooling of these children now terminates. What have they got? How much is it possible for them to get at this age even if teaching were much improved? Then let him ask himself what are the prospects of our future society, we shall not even say democracy, when schooling ends for the great mass of human beings at this stage of maturity? If he thinks at all, he will admit that their future will be determined almost exclusively not by education but by accident. The notion that schooling should end for all but the ablest and most fortunate at twelve or fourteen years of age is a monstrous survival of everything that we as Americans are committed to getting away from. It represents an abdication of social intelligence and nurture; a surrender of society to blind chance with the odds all on the side of those already favoured by fortune.

Mr. Pritchett says that the schools "retain" great numbers who are ill-suited for formal study but who have marked ability in other fields of study. This is true. But is the moral that they should be turned loose at an immature age or that schools should adapt themselves to dealing with these other forms of ability as well as with those that manifest themselves in formal study?

Schoolmen in the field were long ago forced to recognize, as greater numbers of pupils came to them and came to them from sections of the community not habituated to education, that the old formal studies would not meet the need of large numbers. They began experimenting to find out what studies and what methods would meet it. Mr. Pritchett gains an easy and useless victory by his statement of the idea underlying the enrichment of the curriculum. According to him it is the notion that every child should study a little bit of everything. But, as a matter of fact, the present undoubted congestion and consequent superficiality of instruction has a totally other source. It is the product of reaching out to discover, with little in the past to give any aid, just what studies and methods will reach the mass of children, as over against those of a group selected from the intellectual class.

The older type of education has behind it a history of two thousand years. The new type has not succeeded in thirty or forty years in finding a theme of instruction as well adapted to the individuals of an unselected mass as the older one was to those of a selected class. This is unfortunate, but hardly surprising. But to urge as a solution a return to the "intellectual" standpoint and aim of the older type only indicates that the rudiments of the problem have not been grasped. Mr. Pritchett's attack should have been directed not against the schools but against the forces which are changing society. That elementary education should consist of the "fundamentals" is as true as gospel. But whenever we find a person who is quite sure that he already knows the fundamentals of modern life and education, we find also a person who thinks fundamentally in terms of past epochs of history. He thinks he is thinking when he is only railing against the fundamental forces which are making modern society. It does not follow that these forces are good because they are modern, but it does follow that they cannot be ignored; advice to return to the principles of a past age when the forces that made that age are past is futile and barren.

Attempt to act upon the advice merely inures to the advantage of one present class and the disadvantage of another. There is no danger or, if you please, there is no hope of a return to the schooling of even forty years ago, but there is danger that utterances like those of the report will give added force to a movement to curtail the schooling of all but the well-to-do children of the community, and to foist upon the schools a narrow trade training so as to keep children in the social stratum of their parents. There is waste enough and confusion enough in our public education, but it has been saved so far from these infinitely greater evils. A transitional and often incoherent society has reflected itself in a transitional and confused education. Coherency and unity are badly needed, but they will not be found in methods which turn present forces into fixed channels of division. We need to discover fundamentals just as we need to spend a good deal more than a billion of dollars upon our schools and to keep many more much longer in schools than we now keep them. These needs require for their fulfilment faith in humanity and faith in inquiry and continued experimentation. Social snobbishness, fear for the pocket of the taxpayer and complacent assurance that fundamentals are already known render only a disservice.

Electric Light on Motor-Cycles.

Every motor-cyclist at some time or other, if he indulges in night riding at all, had been severely handicapped by not having at his command the effective lighting possessed by the car owner. In the majority of cases he has been compelled to rest satisfied with an acetylene lamp, which the car owner, all too thankfully, discarded many years ago. Of course, to a great extent, this is due to the small amount of space on a motor-cycle available for housing the necessary dynamo and battery, but a number of experiments have been going forward amongst motor-cycle manufacturers for some time past, and it is noteworthy that one of the most famous machines is now fully equipped for the road with complete electric lighting outfit. This, without question, is a step in the right direction, for not only has the owner an effective light available at any moment, but he purchases his machine equipped with accessories that are designed for him instead of being compelled to purchase these from any source.

The Silkworm's Rival.

Man has entered into active competition with the silkworm and, although the worm has the advantage of several million generations of previous practice in the art of silk making, man is rapidly catching up. The output of artificial silk has increased fivefold during the last twenty years, while the output of natural silk has only gained fifty per cent. More than a third of what seems silk to the eye comes from the factory instead of the cocoon. Some forty million foreign feet are now encased in synthetic silk stockings made in America.

Artificial silk is not silk and should never be sold as such. But if it is, it is not so much because the salesman desires to deceive, as it is because the public is unwilling to credit the chemist with the creation of something new or to believe that he can make anything so good as is made by a worm. Of late this un-natural prejudice in favour of nature is being overcome and the new synthetic fibres are being marketed by their manufacturers as they should be under synthetic names. Some of the trade names are viscose, lustron, fibresilk, lustre-fibre, Givet silk, Soie de Paris, Glanzstoff, artiseta, lustra-cellose. There are a lot of others, but I omit to mention them because I can't remember them, says a writer in the "Scientific Monthly".

There are four different modes of manufacture but the raw material is essentially the same, cellulose. This is the substance of wood, paper and cotton, so it is cheap and abundant enough, but the difficulty is to dissolve it so it can be squirted out of the tiny holes in the spinnerette to form the fibres. Water will not dissolve paper pulp, of course, nor will any ordinary solvent except strong acids and alkalies.

The first person to solve the problem was a French man, Count de Chardonnet, who in 1884 deposited with the French Academy of Sciences a sealed document. Three years later this was opened and found to contain a method of making artificial fibre by treating cellulose with nitric acid. The resulting compound, which is a mild form of gun-cotton, can be dissolved in alcohol and ether, like the common collodion that we use to cover our skinned knuckles. But the nitric acid had to be thoroughly eliminated from the yarn, otherwise it was too inflammable.

Another process, invented by the French and worked by the German, got the cellulose into fluid form by dissolving it in a solution of copper and ammonium salts.

In the making of viscose a third method is employed. Wood pulp, such as is used in paper-making, is treated with strong soda lye and then with carbon disulfide. This brings the cellulose into solution as an orange liquid. This is forced through minute holes in a platinum nozzle into dilute acid, which hardens each fine stream into solid fibre and the sulfide is then removed. During the war another form of soluble cellulose found extensive employment as "scac" or dope for aeroplane wings. This is the acetate, made by dissolving cotton or wood pulp in the concentrated acid of vinegar, acetic. Lustron is made by this process.

These various kinds of artificial fibres differ from one another and all of them differ from natural silk. And in this difference lies their value. For fabrics can be woven out of natural and artificial silk and with cotton or wool in any desired combination. The fabric at first may look white and uniform, but if it is dipped in baths of various dyes each thread will attach a particular tint and a complicated design brought out in color.

The artificial fibres and the coaltar dyes make a brilliant combination and through the aid of this alliance our world has become more colorful and cheerful. Sweaters and hose, neckties and underwear, have blossomed out in varied hue like the flowers that bloom in the spring. The knitting machine has taken a new spurt and is now running a race with the loom. Our ladies may now wear synthetic lace that is shadowed by no thought of toilsome fingers and bent shoulders. They may wear synthetic furs without the sacrifice of wild life.

Man is no longer dependent upon what he can pick up in the plant or animal kingdoms, for the new fibre can be made in any form desired, flat or round, smooth or rough, thick or thin, and of any length. A single filament may be run out thousands of yards without knot or break.

The man-made fibre is not so strong as the worm-made silk, especially when wet, but this has not interfered with its popularity so much as the fact that it is lacking in scroop. The scroop, as the sound of the word suggests, is the audible evidence of the presence of silk. What is the use of owning a silk petticoat if nobody can hear it as you pass by? But science is overcoming even this obstacle.

The Testing of Timber.*

By L. N. Seaman, M.A., B.Sc., A.M.E.I.C., Officer in Charge of Timber Testing Forest Research Institute, Dehra Dun.

During the first 25 years the energies of the Indian Forest Service were directed chiefly to the examination of the existing forests, and to the constitution of reserves which would meet the requirements of the country in perpetuity. The wisdom of this course is amply demonstrated by a consideration, for example, of the straits to which the United States of America is now reduced for pulpwood owing to the lack of such a policy of conversation. To this work has been added more recently that of the restoration of the forests, many of which were in a ruined condition, and to the improvement of the condition of the growing stock so as to ensure a steadily sustained yield. The results of these activities are most gratifying, as at the present time the yield of forest products generally is in excess of the demand, and there is an abundance of material to meet present and future requirements.

It is evident, then, that Indian forests have responded well to sylvicultural treatment. They are, nevertheless, now in a financial position analogous to that of a commercial firm which has exhausted its original funds and is in need of fresh capital in order to extend its activities and reap the full benefits of its past work. That portion of the expenditure required for the further development of the yield, and for opening up of communications, etc., must obviously be met by the owner, in this case the State. The commercial development involved in the economic utilization of the output is best entrusted to private enterprise.

In order to enlist the interest of the commercial world it is essential to meet certain definite requirements. First, the producer must supply accurate information as to his output, and this is rapidly being gained by means of a survey of the forest contents and the preparation of "Working Plans" or felling schemes. Also, and this is equally important, it is necessary to show clearly the various uses for which different timbers are suitable, correct methods of handling and marketing, and to provide reliable data as to the strength, durability, etc., of the material it is proposed to put on the market. At the present time few people are aware of more than about a dozen species of Indian timbers of commercial value, while the actual number runs to three figures. This fact is not attributable to any intrinsic inferiority of the majority of our native trees, but to a lack of knowledge on the part of merchants and consumers of the really excellent qualities of many of the so-called "jungle-woods".

Faced by a period of financial stringency, and searching for new sources of revenue or means of extending existing ones, the Government naturally turns to its forest estate, and finds in it a potential source of wealth. Realizing the possibilities of the forests as a source of income if properly worked, the Government of India has decided very wisely to endeavour to supply the information now lacking. At the Forest Research Institute at Dehra Dun, it has organized special sections dealing with Wood Technology, Wood Preservation, Timber Seasoning, and Timber Testing. The first deals with the correct identification of woods, and a critical study of their structure with a view to suggesting their probable suitability for different purposes. The second investigates the best methods of antiseptic preservation of those timbers whose value is now impaired by lack of durability or by liability to insect attack. The third deals with the many problems arising out of efforts to season timber satisfactorily. Correct methods of piling, housing, etc., for air seasoning are studied, and the application of scientific steam and hot air seasoning to Indian woods is carefully investigated, and kiln designs and drying schedules prepared. The fourth section deals with the subject of this lecture—the testing of Indian timbers with the object of showing their suitability or unsuitability for various purposes.

Many, indeed, are the timbers for which the engineer and the architect can as yet find no reliable information as to allowable working stresses, nor any definite specifications of what defects may be admitted, and what defects render the material unfit for structural use. Even for those timbers for which strength figures are found in some of the accepted engineering handbooks such a diversity of values exists for the same timber that they are often of little help.

* Part of a Special Lecture delivered at Bombay.

The need for reliable strength data on timbers has long been felt in the Forest Service and some excellent work has been done by Prof. James, Prof. Everett and Mr. R. S. Pearson. But none of these gentlemen had the time to conduct an adequate number of tests, and many extraneous disturbing influences were of necessity overlooked. During the late war the need became a necessity and Mr. Pearson, the Forest Economist at Dehra Dun, with inadequate equipment, tested 34 species with a view to determining their usefulness in aeroplane work, rifle manufacture, etc. It was not, however, till 1921 that a properly equipped Timber Testing Laboratory was installed at the Forest Research Institute and placed under the direction of a specialist.

Since that time no less than 16,700 tests have been made and reports drawn up. These reports, committed to paper, are not very pretentious, but they represent a great deal of work, and I venture to state that engineers and architects will agree that they are of great value. This value is further enhanced for the trade in general by the fact that the results are perfectly reliable for use in making a comparison between our own and American and Canadian timbers, inasmuch as all tests have been carried out on the same lines as the tests in those countries. It is no longer a matter of "guess-work" to decide whether or not an Indian timber may be substituted where formerly Douglas Fir, Southern Yellow Pine or American Hickory were used. Also from the tests' results safe working stresses are derived.

The work of the Timber Testing Laboratory is at present conducted along two general lines known as Project No. 1 and Project No. 0. The former is a systematic investigation by standardised methods, of the strength values of all commercial and possibly commercial Indian timbers, and the latter comprises such special tests as are necessary to answer the many enquiries received at the Institute. Other projects will be added from time to time. It is expected shortly to start work on Project No. 2, which will cover the testing of Indian timbers in the form of full-sized structural timbers.

Further reference will presently be made to the work already done and still in progress but for the moment I shall briefly summarise as follows :—

Seven species have been completely tested under Project No. 1, tables of results prepared, tables of allowable working stresses compiled, and tentative grading rules drawn up.

Twelve species have been tested under Project No. 0 and provisional reports prepared.

Grading rules and tables of working stresses have been drawn up and submitted to the Military Works Department, the Punjab Public Works Department and the Bridge Department of the G. I. P. Railway.

Several species have been tested for their probable suitability as sleeper woods and recommendations prepared. The results on the Red Spruce alone show it to be at least equally as good as White Spruce, a timber which hitherto has been, for some reason unknown, rejected by timber merchants and railways, with the result that it is now accepted, and the Punjab thereby enabled to increase its output of sleepers by 56%.

A long investigation has established the suitability of two Indian species of timber as substitutes for American Hickory as oil well sucker rods. The value of this work is seen in the fact that the annual import of American Hickory rods for oil wells in Burma is about eight lakhs of rupees. This study is still in progress and doubtless other suitable Indian timbers will be found. These are a few examples only of the results achieved to date.

The present position is a difficult one financially. At the same time the existing lull in trade offers us the opportunity of catching up our arrears and it would be difficult to suggest a more profitable investment than one which aims at the full realization of our forest resources and simultaneously to render this country independent of outside sources of supply, and place it in a position to dispose of its surplus stock in the lumber markets of the world. By means of rational and comprehensive grading rules, especially, it is hoped to be able to achieve a more economical use of structural timbers, and a satisfactory basis of agreement between producer and consumer. Much has already been done along these lines in America, and it is high time that India should prepare to reap the benefits that a wise forest policy has placed within her reach.

The Travancore Durbar has informed the George Brunton Company of British Cochin that, if they are prepared to come to a certain understanding with the Durbar, it is prepared to give 8,000 acres of forest land for collecting wood for the Company's match-making concern.

Insurance and Company Promotion in Mysore.

By "Pro Bono Publico".

Anent the number of new Insurance Companies which have recently been formed and about to form in the Mysore State an experienced and well-known insurance official was interviewed to express his frank opinion which runs as follows :—

"I do not propose to traverse the somewhat extraordinary statements made by some of the promoters of these new concerns. No one, I take it, objects to reasonable and rational competition. It is good for business, and helps to ensure that the policy-holder will get a fair deal, but a distinction *must* be drawn between 'life assurance business' and a 'trading concern' such as a draper's or a grocer's shop. The establishment of a large number of shops tends to produce cut-throat competition, and reduces prices to the benefit of the customer. With *life assurance* the position is reversed. The premia charged to the public being based on the inflexible law of mortality cannot be lowered to any appreciable extent without serious risk of insolvency to any company attempting such a course, while the multiplication of life offices must increase the cost of obtaining business as the new companies have to pay larger commission to agents than their older competitors. This increased cost must necessarily reduce any dividend or bonus that may be available for the shareholder or policy-holder, so that, instead of benefiting by competition, he suffers by reason of it.

"One of the results of the Commission which investigated the affairs of American life offices some years ago was the passing of a law which restricted the companies to a certain proportionate amount of new business in each year on the ground that excessive competition increased the management expenses to the detriment of the policy-holder.

"I have before me the prospectus of a new company, which states that the desire of the promoters is to keep the rates of premia as low as possible. Here I refer the reader to what I have already stated in the first para. Another new company states that the money of the Mysore public is being taken away by outsiders. Here, again, I refer them those interested in the matter to the investments of all those outside companies in Mysore Government Bonds to a largest extent. Even to-day many insurance companies which are working in the Mysore State are willing to purchase any amount of Mysore Government Loan Bonds. If the object of the newly started companies is to stop the money of the Mysore public going out of the Mysore State, how can they expect the public of British territory to come forward and insure in the companies situate in Indian States ? Here, again, is another direction in which the policy-holder's interests are not the first consideration, as they should be in every well-conducted life offices. This, after all, is the main desideratum.

In the interest of the general public who are inclined to invest and insure in new concerns, I cannot do better than refer them to the following taken from the latest issue of the "Mutual Provident Messenger," a journal published by the A. M. P. Society in the interests of the Australasian insuring public. Writing under the heading "*Exploiting the Public,*" this journal says :—"We feel that we are justified in using this expression with reference to several new life assurance companies which have recently been floated. The procedure has generally been as follows : An ambitious canvassing agent for some life office conceives the idea of forming a new company, with himself as 'managing director' or 'governing director'. In the prospectus which is drawn up provision is, of course, made for an allotment of so many thousand paid-up shares or so much cash (or both) to himself as 'promoter' of the company. The public is then approached to take up shares, and rosy stories are told of the marvellous success of other proprietary companies—transacting a different class of business altogether—are instanced as an additional lure to the investor. It is hardly surprising, perhaps, that the general public which knows nothing whatever about life assurance finance, is taken in by these plausible statements, and rushes in to take up shares. Each share-holder is then expected to support his own company by taking out a policy persuading his friends to do likewise and so the game goes on."

"But what is the actual position ? To provide the organization for a new life company is a most expensive undertaking, and all business secured has to be paid for at high commission rates. The consequence is that it is a matter of practical impossibility to make a profit on a proper acturial basis for some

years. The *shareholder should know what he is doing before he invests his money,* but the unfortunate policy-holder is to be pitied for assuring in a company which cannot possibly declare a legitimately earned bonus on his policy for many years to come. If, instead, he had assured with one of the other leading and well-established offices, his policy would have received a bonus right from its commencement."

"There will be a rude awakening one of these days, and the matter is so serious as to call for legislative action on the part of the Mysore Government for regulating the formation of Insurance Companies and ensuring that dividends are not paid by them to shareholders unless properly earned and certified to by competent authority.

"I hold no brief for dishonest men, whether in life assurance business or any other, and would gladly welcome the exercise of any authority which would tend to suppress the exploitation of the public."

Indian Sugar Committee.

A Madras Government Order, No. 390, Development, dated 16th March 1923, says :—

In their order No. 1244, Development, dated 18th September, 1922, the Government, while announcing the facilities which they were prepared to give for the prosecution of schemes for the development of the sugar industry in this Presidency, referred to a proposal then under their consideration for the deputation of an officer of the Agricultural or Industrial department to make a preliminary examination of areas in the Agency tracts or elsewhere which might appear suitable for the cultivation of sugarcane and for the installation of sugar factories. The Government are now pleased to sanction the deputation of M. R. Ry. S. Sitarama Patrudu, an upper subordinate of the Agricultural Department for a period of six months for the necessary examination and investigation of the possibilities of cane cultivation and of the opening of sugarcane factories in the Agency as well as in the tracts specified in paragraph 4 below :—

2. The special points for investigation and report by the Special Officer are :—(1) areas where suitable lands for growing cane are to be found ; (2) the extent, situation and general character of such lands whether in large block or in small scattered areas with the details as to the extent of land belonging to Government, private, or included in reserved forests ; (3) facilities that exist as regards water and labour supply also as regards communications by road or rail with outside markets ; (4) the possibility of improving such facilities or providing them where at present they are wanting; and (5) what assistance might suitably be given by Government and in what form ?

3. The Special officer will meet the Agency Commissioner and the Agency Divisional officers and explain to them what is aimed at and consult them as to the prospect of finding suitable lands in their divisions. Necessary instructions have been given to the Agency Commissioner in the matter and the Special officer will correspond direct with the Commissioner and make arrangements with him as to the time of his visit to the Agency and other matters connected with the subject of his investigation.

4. The Special officer will also investigate the possibility of raising cane in the area irrigable by the Thimmarazu tank near Lingamparti village in the Peddapuram taluk of the Godavari district, as also in the area in and around Eleswaram village in the same taluk. It has been suggested that if a dam were erected across the river Yeleru passing by Eleswaram village, sufficient water will be available to grow sugarcane on a fairly large extent of land there. Suitable lands are also reported to be available in the Tanjore district and the Special officer will examine the tracts mentioned below and report on their suitability for growing cane and starting a factory :—

(*a*) an area of about 1,500 acres of unoccupied waste on both sides of the Vennar river below the Kanchamangalam anicut five miles below the Grand Anicut ;

(*b*) the whole tract of land west of the Tanjore—Trivadi road bounded on the north by the Cauvery river and on the south by the Vennar and traversed in the middle by a drain known as Konakadongal containing about 20 to 25 thousand acres ;

(*c*) a sandy waste of 20 to 25 acres midway between Budalur railway station on the South Indian Railway and Tirukattupalli village on the banks of the Cauvery at a place where the Pillaivaikkal crosses the road.

It is reported that the last will be suitable for the location of a factory.

The Belgian Lace Industry.

The lace industry has existed in Belgium for over 400 years, during which time it has passed through various phases of prosperity. At present the manufacture of hand-made lace is at a low level, the number of lace-makers in Belgium having shown a steady decrease since 1870, when there were, according to most authorities, about 150,000 in the country. There now remain only about 30,000 lace-makers in Belgium, in contrast with 45,000 workers before the war. This decrease of 15,000 workers has occurred, especially since the armistice, owing to the extensive employment of female labour in factories during the past few years.

According to a report by the Secretary to the United States Trade Commissioner at Brussels, lace making, centralized chiefly in East and West Flanders, is essentially a home industry, especially adaptable to an agricultural country, where the attraction of more remunerative work in industrial centres does not influence the labour supply. Lace workers rarely work the year round at this occupation but employ an important part of their time in agricultural or other labour. For an average worker, from 100 to 150 days in the year are given over to lace making.

About half of the lace-makers in Belgium are found in West Flanders and about two-fifths in East Flanders, both regions eminently agricultural in character. A few lace-makers are scattered through the other Provinces, except Liege, where no lace is made. Some of the important lace making centres in West Flanders are Thielt, Bruges, Dixmude and Roulers, and in East Flanders, Alost and Termonde. The industry exists in a smaller degree around other centres in these Provinces, but shows a tendency to disappear entirely in the North of East Flanders, where industries centred in small towns attract female labour. Cigar factories, glove making, lingerie, and various small industries have taken a good number of lace-makers away from their original occupations. In these and other industries female labour often receives 6, 8 and even 10 francs for a day's work of eight hours, whereas only good lace-makers can at present earn 4 francs a day. Numerous convents and lay-schools give instruction in lace-making and turn out many skillful workers, but these workers leave the lace industry for more remunerative labour when they approach the age of 18 years.

A serious source of competition for Belgian hand-made lace is imported machine-made lace from Germany, France and England. German competition to torchon and Cluny laces is most serious, as these two kinds are especially adapted to machine-made imitations. French and English machine lace imitates the finer laces, such as Valenciennes, and offers excellent imitations, but Belgian manufacturers of the hand-made articles state that these imitations do not equal the better quality of real lace. All bobin-made lace is more or less successfully imitated, but needle-made lace (Brussels, Venice, rose, etc.) has not yet been especially well imitated. It is evident that the prosperity of the hand-made industry depends greatly on the production of the finer laces that cannot be well imitated by the machine-made article, and it is precisely for these laces that the supply of the labour is the least.

Estimates of the production of lace in Belgium are extremely varied, but a conservative and probably accurate estimate of the pre-war annual production is 15,000,000 francs worth of lace of all kinds. The quantity of lace produced at present is only about half the pre-war production, but values having more than trebled it can safely be said that the annual production is now in the neighbourhood of 25,000,000 francs. Of the total production about 25 per cent is Cluny and torchon, 25 per cent Valenciennes, and 15 per cent Venice. Brussels, Bruges, and Milan or (Flanders) laces form a large portion of the remainder of the production. Chantilly is practically no longer made in Belgium. Owing to the fact that the value of lace varies greatly over short periods, and depends upon the workmanship of each piece, price estimates are misleading.

Machine-made lace has not been extensively produced in Belgium, but this industry has shown a certain extension since the war. Before the war there were two establishments producing machine-made lace, with an annual production valued at 700,000 or 800,000 francs. The personnel employed was something over 100 persons. At present there are three such establishments in the country, employing about 300 workmen and producing about 2,500,000 francs worth of lace annually.

Notes from America.

A Modern Death-Trap—The Bank Vault.

The dramatic liberation after several hours drilling through steel walls, of a young bank clerk, imprisoned in the vault of a Paterson bank by a fellow clerk's practical joke, and removed in the last stages of asphyxiation and nervous collapse, has directed national attention to the peril of the modern bank vault, and the necessity for finding the means of prompter rescue than was possible in this instance.

Only the prompt reporting of this act by the practical joker who realized an instant after yielding to the impulse which pushed the great door of the vault to on his comrade, how serious the consequences of what he had done might be, and the skill of the machine tool operators who worked against time to save the imprisoned man's life, prevented the accident from having fatal consequences. But bankers throughout the country are now trying to devise means of safeguarding the lives of persons who may, in spite of the usual precautions taken, be caught in these air-tight and practically drill-proof underground steel caves which are the depositories of modern wealth

Outwardly the time-lock door gives little intimation of the menace it constitutes to the man who may be caught on the wrong side of it. Weighing from twnety to forty or more tons it swings to at the touch of a finger. With the turn of a yacht wheel the door slips into place, and is then irrevocably closed for hours. Once a door has been squeezed into place by the compressing wheel, and the lock itself given half a turn to the left, no power on earth short of explosion or tool force can pry the tomb open until the hour for which the clock has been set arrives.

Vaults, in order to offer perfect security for the wealth stored in them, must be water-tight and fire-tight. That means that they must also be air-tight. According to their air space they are capable of sustaining life from two to five hours at most. Unless released within a few hours, anyone caught in them must die.

There are many small vaults which lack an alarm system. An excellent arrangement against loss of life by accidental imprisonment in the steel chamber is that of the Guaranty Trust Company, which has the largest single vault in New York City. Its scheme is military. A thorough search prior to closing makes imprisonment almost impossible. A wall of mirrors at the end of the corridors reflects that part of the corridor behind the back of the examining attendant. There are no columns. The aisles are clear to the vision from end to end. No one could escape the most cursory glance. Each corridor is scrutinized, and the entire wall space examined for missing or open boxes. The coupon booths are searched and the word passed that the vault is emptied.

The vault crew retires to the outer hall and the immense door platform is raised to permit the door to be swung into place. At the first inch of lifting the platform sets off an alarm which clangs through out the safe deposit quarters for three minutes. No sojourner in the vault would tarry long even if he had achieved the impossible and escaped the eyes of the vault staff. Next, the great door is swung into place. Thirty-eight tons slide majestically with the touch of a finger. Like a great ocean liner it slips into its socket, then halts for the turnscrew to grind it into line. The compression wheel shoves the door into its bolt socket. The handle is sprung, the combination set, and the time clock clicks.

The principal obstacle to entrance from the outside is the time clock. This is under glass on the inside of the door. It is a cog-pendulum clock, of which there are four on every safe, in case one should break. The time clock operates against the bolt centre of the great door, and until it runs down it is impossible to turn the handle that releases the steel bolts from their sockets in the door jam. The clock is set like a kitchen alarm clock and goes off the same way, usually a half hour to one hour ahead of opening time so as to allow for possible delays in working the combination. A clock can be turned off only from the inside of the door. Once the door is closed, therefore, the clock can only be turned off by some one on the inside. The person there does not necessarily know this and cannot take advantage of it unless he can be directed by some one on the outside.

The only effective precaution which can be taken is to make it possible for the person shut into signal for help. In one large New York bank, the Guaranty Safe Deposit, a light burns all night in the vault, though all other lights go out automatically when the door is shut. Below is the telephone, which

connects with the central telephone office. Above the telephone is a typewritten card of instructions, giving the telephone number of the night watchman who patrols the bank corridors all night. The imprisoned person need only tell his plight to this officer, who would set about securing the necessary help. The bank officials would then have to find the two men who control the unified combination figures, and assemble at the vault door. They would then by telephone begin their instructions to the man inside, telling him to go to the safe door and break the glass that enclosed the time clocks, and give him directions as to how to release the clock bar, a simple operation. The officers would then spin the knob to the opening numbers of the combination. Each officer has his own disk, his own combination. One cannot work alone. Each must take his turn with the twists and numbers. Once the combinations are worked out the bolts, released by the time bar from inside, can be pushed out of their sockets and the door opened.

LENT ABROAD BY THE UNITED STATES.

Foreign borrowing in the United States reached in 1922 the highest point since the war according to a survey made by international bankers.

Foreign Government and Municipal loans floated in the United States market last year aggregated $680.565 millions and, in addition, foreign corporations borrowed $153.206 millions while loans of American corporations abroad totalled $36.221 millions. This made a total of $869.992 millions in foreign loans, a new record since the war.

In 1921, according to bank records, $625.820 millions was lent abroad and in 1920 foreign loans were $576.322 millions. This means a total of $2,070 millions has been borrowed here by foreign governments, municipalities and corporations in the last three years.

Details of these loans floated in the local market during 1922, as compiled by the Guaranty Trust Company, were given as follows (last three figures omitted):—

Country	Govt. and Municipal	Corporation	Total
	$	$	$
Australia	10,758	2,500	13,258
Dutch East Indies	100,000	..	100,000
Belgium	...	2,500	2,500
Czecho-Slovakia	21,500	..	21,500
Denmark	..	5,000	5,000
France *a*	31,000	41,975	82,975
Netherlands	47,500	18,220	65,620
Norway	21,575	..	21,575
Jugoslavia	*b* 15,250	..	15,250
Argentina	28,095	..	28,095
Bolivia	24,000	..	24,000
Brazil	*c* 61,380	4,000	65,380
Chile	19,350	..	19,350
Columbia	5,000	..	5,000
Peru	2,750	..	2,750
Uruguay	6,000	..	6,000
Cuba *d*	*e* ..	... 28,500	51,921
Dominican Rep.	6,700	..	6,700
Haiti	16,000	..	16,000
U.S. Possessions *g*	*f* 50,587	3,985	41,072
Canada	207.220	46,801	248,601
Newfoundland *h*	6,000	..	6,000
Total	680,565	153,206	869.992 *i*

(*a*) (*d*) (*g*) Including loans of American corporations abroad: $10 millions, $23.421 millions and $2.8 millions.

(*b*) The balance of an offering of $25 millions is understood to have been withdrawn.

(*c*) State of Bahia $5 millions issue, offered in October, is understood to have been withdrawn and is not included.

(*e*) Bank loan of $5 millions in January is not included.

(*f*) Government and Municipal figures include Hawaii.

(*h*) Compilation of Commercial and Financial Chronical for eleven months, plus December offerings as advertised.

(*i*) Foreign currency issues converted into dollars, with two exceptions, on the basis of the original offering price, compriso $63.308 millions of the Government and Municipal total and $22.695 millions of the corporate total.

The following list shows the total foreign financing for the last three years: Government and Municipal, 1922, $680 millions as compared with $507.070 millions in 1921, and $386.022 millions in 1920; Corporation financing in 1922 was $189.427 millions as against $118.750 millions in 1921 and $189.400 millions in 1920; making a total of new foreign financing of $869.992 millions for 1922, as contrasted with $625.820 in 1921 and $576.322 millions in 1920.

New foreign Government financing thus far in 1923, according to *The New York Times* compilation, amounts to $93.153 millions. Of this $18.153 millions was offered during the week of January 12, and consisted of four issues of Canadian securities; $50 millions was

offered during the week of January 19 consisting of Republic of Cuba external sinking fund 5½ per cent gold bonds ; and $25 millions was offered during the week of February 16 when $25 millions of Dutch East Indies sinking fund 5½ per cent gold bonds were offered.

Local banking syndicates state that nothing in the way of new foreign financing in Europe is looming up at present, the attitude being that the tangled politico-economic situation in Europe prevents serious consideration of new securities at this time. It is known, however, that some South American financing is under way and probably will be launched soon.

Residual Cotton-seed Fibre.

Some three years ago attention was drawn in these columns to the economic bearing of the utilization of the residual cotton fibres, retained by the woolly varieties of cotton-seed, upon cotton cultivation within the British Empire. Cotton is a competing crop, and any developments tending to increase the market value of the cotton-seed concomitantly produced necessarily react favourably upon cotton cultivation as an industry.

In recent years immense advances have been made in colloidal chemistry, and the results which have attended research in that field have in some cases been very remarkable. In the case of the manufacture of artificial silk progress has been astonishing. It was in 1892 that Mr. C. F. Cross announced his discovery of Viscose, but it was not until twenty years later that the manufacture of artificial silk by the "Viscose" process attained any great magnitude. Since then its growth has been extraordinarily rapid, and to-day the capitalized value of the industry based upon Viscose has reached £100,000,000.

Mr. Baldwin, general manager of the American Viscose Company, is reported to have stated in a lecture recently delivered before the American Rotary Club, that in 1913 his company produced 1,566,000 lbs. of artificial silk. In 1920 the production was 8,000,000 lbs., and this year the Viscose Company will manufacture 20,000,000 lbs. Within the next few years, the additions to the plant and the erection of new units are expected to be completed, when the capacity will be 35,000,000 lbs., per annum. Mr. Baldwin further stated that the United States now manufactures one-half of the artificial silk made in the world, and that 90 per cent of this is made by the Viscose process.

While it is possible to produce Viscose from material other than cotton fibre, it is held by many authorities, says a "Times" correspondent, that the type of cellulose obtainable from cotton is best suited to the manufacture of artificial silk. The average quantity of cotton-seed produced annually in the United States for the past twenty years has been over 5,000,000 tons, and the quantity crushed in the oil mills there has been over 4,000,000 tons per season for the last ten years. The quantity of the residual fibre available, commercially speaking, from this quantity of cotton-seed may be taken not to exceed 250,000 tons or 500,000,000 lbs. At a suitable price there would seem little doubt that residual cotton fibres would be employed for the manufacture of artificial silk in preference to wood pulp. In fact, in some processes wood pulp is inadmissible. Taking the yield in the finished article at a maximum as 50 per cent of the weight of the raw residual fibres, there would thus appear to be a large and growing potential demand in the United States for residual fibres in the manufacture of artificial silk.

The industrial employment of residual Cotton-seed fibres in the United States has greatly expanded during the last few years, but owing to the enormous surplus stocks of raw and partly-manufactured residual fibres left on the hands of the United States Government at the conclusion of hostilities, the effect of this increasing demand upon the market value of residual fibres did not begin to make itself felt until these surplus stocks became practically exhausted in the summer of last year. The price of linters in the United States began to rise in the autumn of last year, and has steadily advanced, in spite of a very largely increased lint production compared with the previous season, until it has reached a level higher than that at which it stood during the war. According to the *Cotton Oil Press* for February, 1923, the price of "even reasonably clean hull-fibre" was 6½c. per lb. Second-cut linters were fetching over 7c. per lb., while the first light cut of high grade linters were selling at the unprecedentedly high price of 14c. per lb.

It is not easy to forecast the trend of markets in these uncertain times, but it is a reasonable assumption that the value of these residual cotton fibres in various industrial applications is becoming more and more widely recognized.

Books in Brief.

Restoration of the World's Currencies.

By R. A. Lehfeldt, D.Sc., Professor of Economics in the University of the Witwatersrand, Johannesburg. Published by P. S. King & Son, Ltd., Orchard House, 2 and 4, Great Smith Street, Westminster. Price 6*sh.* net.

We welcome this book as a valuable contribution to the proper study of an important problem of the day. Dr. Lehfeldt writes in a cautious but critical vein. In view of the excellence of the book, there is hardly any need for the apologetic note which Dr. Lehfeldt strikes in introducing it to the public. Dr. Lehfeldt has a natural right to speak on this subject, for, he is Professor of Economics in a South African University, and South Africa is a great producer of gold. In currency he is for internationalism, though he would treat nations as such. His first chapter, which treats of general principles, is a luminous one, and the succeeding chapters complete his idea of the problem and the remedies he puts forward. The whole book is more an essay than a treatise, which, however, does not mar its interest to the general reader. Dr. Lehfeldt gives in an appendix the views of the experts consulted by the Genoa Conference. He differs from them in thinking that the danger is not so much from that too rapid appreciation of gold which they speak of as from renewed depreciation and its associated evil of inflated currency. Hence while the Genoa recommendations contemplate international regulation of credit, *i.e.*, demand for gold, that seems to him a difficult and dangerous plan which should be reserved, as he suggests, till the situation is better understood and more under control. Incidentally we may note that India comes in for some remarks here and there in the book. He remarks, for instance, that "the Indian people are .....the best customers of the gold mines. They devote an appreciable part of their small earnings to buying gold and silver, which though made up into jewellery is regarded as part of the available resources of a family, to fall back on in time of need. Hence it is that something occasionally comes back out of the hoard, as in the two years mentioned, but, ordinarily the gold taken by India must be regarded as having passed outside the range of commerce." In 1911, the net imports of gold into India rose to a maximum of £m25. We would add that Dr. Lehfeldt puts in a powerful plea for the use of gold coins (p. 113 *et seq.*) the advantages of which are at present considerably overlooked. We commend the book to the lay-reader and to the economic student as excellent on the subject to which it is specially devoted. It is written in a simple, non-technical style and ought to go far in popularizing Dr. Lehfeldt's reasoned views on the subject.

The Madras Co-operative Manual.

By F. R. Hemingway, I.C.S., Registrar of Co-operative Societies, Madras Presidency. With a Preface by H. E. Lord Willingdon, Governor of Madras. Price Rs. 1—8—0. Published by the Superintendent, Government Press, Madras.

A pathetic interest attaches to the publication of this book, to which H. E. Lord Willingdon writes a brief but telling preface. Mr. Hemingway, the author of this publication, was—for he is dead now— a sincere and ardent co-operative worker. We say "worker" advisedly, for, he was no mere Registrar taking a mechanical interest in his duties but pursuing it with all the love of an ardent but discriminating propagandist. He worked with zeal during the past few years in Madras and the result has been testified to in the pages of this *Journal* where his work has been reviewed from year to year. Mr. Hemingway did well to project this handbook before he was called away—all too soon for his friends and co-operation generally in Madras—for, none could have done it better than he has. The plan of the book shows how well he conceived this work. Part I gives a short but full history of the Co-operative Movement in the Madras Presidency. Part II is really a handbook for Village Societies. Part III is devoted to "Hints to Departmental Officers," which we find to be most useful and informing. Finally, Part IV contains the "Act, Rules, Bye-Laws and Forms". We do not propose further to describe this book, for it is unnecessary.

Good wine needs no bush. This "Manual" is so comprehensive and so well written that we feel that not many words are required to commend to Co-operators in Madras and the South generally. To Co-operators in India we would urge that they should buy this book and keep it for reference purposes. A more practical work whether for Departmental officers or to voluntary workers cannot be recommended.

A Book on Greenland.

Mr. Seward, master of Downing College and Professor of Botany in Cambridge University, went to Greenland in 1921 to botanise and geologise. He has written a little book (says the *Daily Gazette*) about that strange country that contains much matter of importance for the scientific reader, but which will appeal to the general reader as a most fascinating travel-book. Greenland is a wilderness of uninhabitable ice, save a thin thread of land round the coast, though once it had a warm climate. The coastline is inhabited by some 15,000 Eskimoes, a Mongolian race that came from Asia, by the Behring Straits. Efforts to Christianise them have been but indifferently successful. They have dim national aspirations. Fifty Danish officials administer the country. These alone are allowed alcholic drink, and the higher you go in the service, the more you are allowed : presumably to encourage competition for promotion. There are no taxes, but the Danes extort a revenue by selling the natives necessary commodities at enhanced prices. There are two newspapers, which appear monthly and are distributed free. One of the two editors is also a barber, and doubtless makes one pair of scissors do for both trades. An Eskimo word, the author quotes, contains 43 letters, but it has the same connotation as a sentence of 13 words in English. The scenery is indescribably magnificent. Mr. Seward's numerous photographs convey an impression that makes the reader long to see those monstrous bergs, black seas and mysterious fiords.

Topics from the Journals.

1. The Journal of the Ministry of Agriculture. June 1923.—The Agricultural Worker, by Prof. John Strong, ll.d.
2. Journal of Royal Society of Arts. June 1923.—Postal and Telegraph Work in India, by Geoffrey Rothe Clarke, i.c.s., etc.
3. International Review of Agricultural Economics. April—June 1923.—Measures taken to facilitate Agricultural Co-operation in the United States, by Lloyds Tamy.
4. The Bombay Co-operative Quarterly. June 1923.—(a) International Co-operative Trade, by Leonard Wolff. (b) Agrarian Credit and Land Banks by Prof. K. T. Shah.

Acknowledgments.

(1) Hours of Labour in Industry—Belgium. Re. 1.

(2) Constitutional Developments in Mysore. Government Press, Bangalore. Re. 1.

(3) The Report of the Committee on the Indigenous Systems of Medicine, Madras.

Co-operative Societies in the Punjab.

Reviewing the annual report of the working of the Co-operative Societies in the Punjab for the year ending the 31st of July, 1922, the Punjab Government Ministry of Agriculture says : "The year was again one of general progress. The total number of societies rose from 8,453 to 9,310 and the members from 239,287 to 269,301. The total working capital rose from Rs. 3,60,58,517 to Rs. 4,30,83,214. Among the various types of societies the Village Credit Society, which meets a vital need of the province, retained its predominance. Co-operation in the towns, however, makes no headway and though there was a large increase (from 303 to 401) in the number of non-Agricultural Societies the Registrar considers that the figures are illusory, and that there has been no real progress. Altogether 1,032 new societies were registered during the year. The fact that double this number of new credit societies alone could have been registered had funds and staff to control them been available shows that commendable caution was again exercised. The total number of Central banks (37) and Unions (69) has increased from 94 to 106, and their working capital from Rs. 128½ lakhs to Rs. 164 lakhs. There was a remarkable expansion in the movement for the consolidation of holdings. The number of societies rose from 6 to 107, and the membership almost exactly doubled from 1,698 to 3,397.

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The Building Crisis in the United States.

By Virgil Jordan.

As Europeans may have noticed, Americans seem temperamentally unable to do things by halves ; they have a pronounced tendency to go to extremes in anything they undertake. This is only one reflection of that immoderate enthusiasm which characterizes Americans and which has often been noted as a marked distinction between American life and European life. One can see its fortunate side when one remembers with what energy the United States entered the war when she finally did. She spared neither energy nor money to assure victory, and in the prosecution of the war went to many extremes which some Americans have since regretted and from which America as a whole has not yet recovered. Sometimes this trait leads to very embarrassing results. Some Americans feel, for instance, that the American war loans to Europe were an instance of this tendency to go a little beyond the whole length required by a situation, and others point to such things as the anti-radical legislation brought about by the war as another instance of the unfortunate tendency of America to be extreme in whatever she undertakes. The embarrassing side of this American characteristic will perhaps be better appreciated by Europeans when they consider the other extreme to which the United States went after the war had been won, in refusing to have anything to do with the European settlement. This American trait, however, is shown in all aspects of American life, and its reflection in international relations is only one expression of the general tendency of the American temperament.

The whole industrial situation in the United States at present is, from one point of view, a similar expression of the unrestrained enthusiasm of the American. In no aspect of the industrial situation is this more clearly exhibited than in the present situation in the building industry. It has been estimated that after 1914, because of the war, the building construction in the United States fell behind by about fifteen billion dollars worth of building. Up to the middle of 1922, comparatively little headway was made in supplying this deficiency. At about that time, however, the building industry entered upon a period of unprecedented expansion and since then has reached higher peaks than ever before in American building history. It has seemed as if the United States were determined to make up for its fifteen billion dollar deficiency in building all in one or two years. This has put a tremendous strain upon the building industry and therefore upon the whole industrial structure, since the building industry is so intimately related to most of the other basic industries of the country. It was the kind of strain—an invitation to quick profits —which the American temperament is, it seems, unfortunately not able to stand, and it appears now as if the whole building boom, which has been one of the corner-stones of the unprecedented industrial and business prosperity of the United States since 1922, may suffer a disastrous collapse.

About five billion dollars worth of new construction has been undertaken this year. This has meant a tremendous stimulus to the industries supplying building material—the iron and steel, lumber and cement industries particularly—and, what is equally important, has meant an unprecedented demand for building labor. The enthusiasm with which Americans have entered into this building boom has apparently offered opportunity to many of the interests concerned to make a disproportionate amount of hay while the sun shines. Building material prices have

soared beyond the peaks of war time and building labor has been in a position of a victorious army in possession of an enemy country's capital city and able to demand any ransom or indemnity it wishes. The building trades unions have notoriously been the most strongly organized and most predatory of the unions in the United States and their position has undoubtedly been strengthened by the increasing demand for labor in all branches of industry and by the curtailed immigration.

Building is a highly seasonal industry and during the period in which construction is at its highest, building labor has things very much its own way. As a consequence, at the crucial season, when building work is at its peak, building labor has been accustomed to make special demands for increased wages. This year its demands have gone far beyond anything in American construction experience. Extensive strikes have been called on operations under way, with demands for two or three year contracts at the present peak wages. This virtually would put the building industry under a kind of permanent mortgage for two or three years more and stabilize building costs at their present unprecedented peak. It has been felt that such a situation would blast the hopes of the country for lower rents and increased housing facilities for years to come. Nevertheless, because of the exigencies of contracts and commitments, many building operators have had to surrender to the terms of building labor.

Reactions to this situation have been interesting and typical of certain aspects of American economic life. Building unions, of course, have been roundly condemned for their attitude. The building material manufacturers and dealers, however, are no doubt equally to be blamed for this so-called "raid on prosperity," but they are a less obvious and tangible factor in the situation and so have not received their due share of censure. Moreover, no practical measures could be taken to counteract them. As a consequence, the typical reaction against this situation has been one which would result in putting the punishment chiefly on building labor. The American economic system has its own very effective way of meeting a situation like this, and is attempting to apply it. Financial institutions which are largely engaged in loaning funds on real estate have become alarmed at the rapid rise of costs and have begun to curtail their loans. This tightening of the credit screws, if moderately applied, would doubtless tend to check an abnormal building expansion in a wholesome way, but it can also be used to penalize building labor by throwing large numbers of workmen into idleness. It remains to be seen whether this method of regulating the building boom will result in puncturing it entirely or in keeping it within healthy limits. In any case it can hardly be said to improve cordial relations between workers and contractors in the building industry and may in the end tend to stimulate rather than diminish the predatory attitude on the part of building labor.

As a result of this and other factors tending to check the building boom, it is reported that in May the issue of building permits for the larger part of the country as a whole showed a falling off of about seventeen per cent below the figure for the previous month, at a time when normally building would have been going on at a steadily increasing rate. The slump has been most marked along the Atlantic Coast and in a single week in May announcements were published postponing building projects in New York amounting to over fifty million dollars. Whether this checking of the building boom will do anybody any good, is a real question, however. Average building costs are approximately 115 per cent above the average in 1914 and though they may be brought down somewhat by curtailed operations, there seems to be little hope of stabilizing the building industry at a level of costs anywhere near the pre-war level. Building costs are affected not only by wage costs but by costs of materials, which will inevitably remain much higher than pre-war levels. It is estimated that about thirty-seven cents of every dollar of construction costs goes for wages to labor and sixty-three cents for building materials, so that the progressive rise in building costs is due at least as much to the steady rise in costs of material as to the demands of labor. Furthermore, the labor costs themselves in building would naturally be expected to have risen considerably above pre-war levels as wages in other industries had. Besides, the failure of the supply of building labor to increase in proportion to the increase in the population will make for rising wages in this industry. Between 1910 and 1920 there was a decline of nearly 100,000 workmen in five of the most important building trades in the United States —a falling off of approximately twenty per cent. On the basis of the advance in population, there should have been a steady

increase in the amount of building labor available.

The situation has become so serious that there have been organized movements to stabilize the industry at a more normal level of costs. The Government has participated indirectly in this movement. To a certain extent the more progressive building labor unions have joined with the contractors' associations to promote a sound program of this kind. It is felt by all interests concerned that the greatest need in the building industry is for fuller information for the public regarding the level of building costs and the prospective changes dne to changes in the costs of building materials and labor. Accordingly, it is proposed that regular bulletins be issued under Government auspices, giving full information week by week regarding building costs in all localities in the country so that a prospective builder may be able to time his projects in accordance with prospective costs. In this way it is hoped to bring about a spreading of building activity over a large part of the year than is now customary. The problem of the seasonality of the building is undoubtedly one of the most difficult aspects of the situation and if some large scale program can be devised better to distribute the building activities throughout the year, it will help materially. It has also been proposed that public building projects be postponed or distributed so as to level out some of the peaks of building activity and take up the slack labor at certain seasons of the year.

The whole situation reflects the chaotic play of economic forces in American life at present and the failure of unregulated com petition and freedom of action to meet the requirements of the public in so essential an industry as the building industry. As has been indicated, the only effective force of regulation at present is through the banks and the credit system, and this is clearly open to abuse.

Business and Making Money.

"The man who will use his skill and constructive imagination to see how much he can give for a dollar, instead of how little, is the man who is bound to succeed," says Henry Ford, whose daily income of six figures he considers quite incidental, a by-product of his more important work.

"The trouble with most business men," said Mr. Ford, "is the fact that they go into business to make money—to make as much as they can, as quickly as they can. They have a hard time of it, because they are trying to get something some one else has. The principle is wrong and even if it weren't, it would be pretty hard, because there are so many of them trying to 'get', that the competition is terrific.

"What applies to an individual applies also to the entire country. A nation grows as it serves, as its people give the most they can to others—whether in the form of labor, material or distribution. We are now in a period when this is very important. Business is doing its best to come back, but we must encourage it in coming back by holding down prices, especially prices of the raw materials which go into our manufactured products.

"I have in mind coal, iron, lumber, cement, bricks, etc. It is a great mistake for manufacturers to say that they do not care what they pay, as long as all other manufacturers must pay the same price. We do wrong in paying higher prices simply because other people do it too."

"Most manufacturers," continued Mr. Ford, "begin at the wrong end. They ask the production department how much it costs to make the article ; then they add a selling cost and a profit. Next they call in the sales department and say, 'Here's the article and this is the price' ; go out and get it!" At Detroit we have always figured from the other end.

"We began with a human need ; we wanted to give just as much as we could for a dollar. The product must be right ; it must give service ; so I experimented and tested for eleven years, before we were sure the product was as good as we could build it. Then we began to figure out ways to make it more efficiently—to give more for the dollar.

"When the sales slow up, we don't drive the sales' force and try to force folks to buy ; we cut the price ; then more of them can buy and they do. When the price is cut, it is usually cut below the cost to manufacture at the time. Then the production department has to figure out new economies, new short-cuts that will deliver the same car for less money—and they've always done it!

"The more you give the people for a dollar, the more there are of them who can buy. The larger your production, the more you can give," says the "Detroit Free Press."

The Imperial Preference System.

Of recent months a considerable amount of discussion has taken place as to the possibility of increasing trade between the various component parts of the Empire as one means of bringing about a business revival in this country. The stagnation and disintegration of European markets has suggested the further question of whether the colonies can be encouraged, by some more or less artificial method, to replace to some extent these collapsed pre-war consumers of our products. There can be no doubt that at the coming Imperial Conference this question will attract a good deal of attention, and that amongst the suggested means to the desired end Imperial Preference will occupy a prominent position.

At the present time, while it is common knowledge that Great Britain grants a preference to imports of imperial origin, the converse arrangements are comparatively little known. Accordingly, for informative purposes, it has been thought valuable to compile a synopsis of the tariff and preference systems now in force in the most important parts of the Empire. The first concerted step towards mutual tariff concessions was taken at the Imperial War Conference, in 1917, when it was resolved that "the time has arrived when all possible encouragement should be given to the development of Imperial resources, and especially to making the Empire independent of other countries in respect of food supplies, raw materials, and essential industries. With these objects in view this Conference expresses itself in favour of (1) the principle that each part of the Empire, having due regard to the interests of our Allies, shall give specially favourable treatment and facilities to the produce and manufacture of other parts of the Empire." In view of this departure, the progress made along these lines since that time, and the peculiar economic conditions now facing the Empire, the coming Conference is likely to prove of the utmost importance in the development of a common tariff policy.

Great Britain.—It was not until two years after the Imperial War Conference that this country, under the Finance Act of 1919, introduced preferential rates of duty on colonial imports. Such goods, in order to come within the scope of the concessions, must be shown not only to have been conveyed from, but "grown, produced, or manufactured in the British Empire". On the "revenue" duties, the chief of which are levied on tea, cocoa, coffee, currants, etc., sugar and tobacco, the deduction allowed is one-sixth of the ordinary duty. One-third is deducted from the duties levied in 1915 on motar cars, musical instruments, clocks and watches, etc., while a varying preference is granted to imports of colonial wines and spirits.

Canada.—The development of Canada's preference system has been spread over a quarter of a century. In 1897 a preference of one-eighth, raised in 1898 to one-fourth and in 1900 to one-third, was allowed on all duties except those levied on wine, spirits, sugar, tabacco, and related products. The preference was extended during the first few years of its operation to the United Kingdom, British India, New South Wales, the West Indies, New Zealand and South Africa. In 1907 the flat rate of preference was abolished and specific reductions granted in the case of the separate commodities subject to duty, the preference on certain goods yielding large amounts of revenue being nil. This system is still adhered to in the case of Canada, and now applies to almost the whole of the Empire except Australia and Newfoundland. It amounts generally to about one-third of the duty, but in the case of many important classes of British goods to 10 per cent *ad valorem*. The value of the preference, however, is reduced by the application of an "intermediate" tariff to certain countries entitled to most favoured nation treatment. A recent attempt to increase the British preference to 50 per cent was defeated in the Canadian legislature. It is understood that arrangements are shortly to be undertaken under a reciprocity agreement for the application of the preferential duties to Australian goods.

Australia.—In 1906, a preference was accorded by Australia to South African products, and in 1908 to British goods. The latter was considerably increased in 1920, and at the present time amounts in the majority of cases to 10 per cent *ad valorem*, and in more than a quarter of the total number of commodities to 15 per cent. The system therefore resembles that of Canada inasmuch as it varies as between different articles on the tariff schedule, and further in the fact that the concession to British goods is liable to be reduced by the introduction of an intermediate tariff, which has not yet, however, been

applied by any reciprocal agreement with other countries. It differs from the Canadian system in that the geographical scope of its application is much narrower. This difference will be rendered less conspicuous in the event of the negotiations with Canada reaching a favourable conclusion.

New Zealand.—The introduction of Imperial Preference in 1903 took the somewhat peculiar form of the levying of a sur-tax on goods not having their origin in the British Dominions. The tariff now in operation, dating from 1921, gives a preference to goods of imperial origin in the case of two-thirds of the items on the schedule. On the majority of these items the preference amounts to from 10 to 20 per cent *ad valorem*. As in the case of Australia, an intermediate tariff has been introduced, but not yet applied.

South Africa.—A preference on United Kingdom products was first granted in 1903. The favourable rates were extended by reciprocal agreement to Canada, Australia and New Zealand shortly afterwards. The preference, while accorded to most classes of goods, is small, as compared with those given by other parts of the Empire and amounts at the present time to about 3 per cent *ad valorem*.

British West Indies.—The preference in the case of the British West Indies is determined in the main by the trade agreement arrived at with Canada in 1920, which was ratified by all the islands except Bermuda. The deductions, which apply to this country as well as Canada, range from 25 per cent of the ordinary rates of duty in the case of Jamaica and the Bahamas to 50 per cent in the case of Barbados, British Guiana, British Honduras and Trinidad.

India.—No preference is at present accorded to goods of imperial origin. There is, in India, at the present time, a strong movement for protection. The majority report of the Indian Fiscal Commission, published last autumn, recommended the inauguration of a tariff system to be applied separately for revenue and protective purposes. On the subject of imperial preference the report recognized the possibility of granting substantial advantages to British goods by this means, but held that this could only be done by imposing a serious burden on India itself. Accordingly a majority of the Commission took the view that preference if granted, could only be given in the case of a comparatively small number of commodities.

From this brief summary it will be seen that the Dominions in general lean far more towards protection in their fiscal policies than does Great Britain. It is this fact which presents one of the great difficulties to be faced in negotiations looking to closer trade relationships between the constituent parts of the Empire. For while the Dominions possess in their tariffs, apart from any other advantages which may or may not accrue, a basis for the negotiation of reciprocal trade concessions as between each other, this country, with its duties levied almost entirely for revenue purposes, has no such foundation on which to proceed. The importance of this factor in the achievement of an imperial trade reapproachment may be illustrated by statements recently made by Mr. S. M. Bruce, the new Australian Premier. "From the Australian standpoint," he said, "trade relations with Britain are far from satisfactory. To-day Australia is giving Britain an enormous preference, and by so doing restricting its trade with other nations. ....But Australia has to compete in the English markets against the goods of foreign countries.... In the circumstances Australia is surely entitled to ask for a British declaration of policy based on mutual economic necessity." Such a statement is of the utmost significance coming from a country which in 1922 sprang into the position of being the second largest customer for United Kingdom goods.

Dyestuff Combination.

It will be remembered that an agreement was entered into last year between the German dyestuff group, the I.G., and the French coal-tar colour company, the Cie Nationale de Matieres Colorantes. No official statement has been made as to the terms of the agreement, but it is understood in well-informed quarters that the German group are to receive 50 per cent of the profits of the French concern, and in return grant it the full use of their patents and give any technical assistance that is required. Apparently Swiss dyestuff makers are now coming into the combination, for at the general meeting of the well-known Basle firm, the Chemische Fabrik von Durand and Huguenin, two significant appointments were made, Dr. Krekeler, a director of the Bayer Company, Leverkman, and the managing director of the French Cie Nationale de Matieres Colorantes, being added to the directorate. Further developments will be watched with interest.

The General Nature of the Socialized Schools.

By H. B. Wilson, Superintendent, Berkeley, California.

Before proceeding to discuss in detail how to establish and operate a socialized school, it seems desirable to set forth in brief outline the essentials of the socialized school, which are to receive extended treatment in the chapters following this. Such a general view here will make it easier to fit each detail of the socialized school into its proper place in the finished scheme as the treatment proceeds.

It will be well at the outset to distinguish in a general way between three words which are much used in current discussions of efforts to improve public education. These words are "socialized", "democratized", "Americanized". Each occurs in three forms, giving us socialized, socialization, socializing; democratized, democratization, democratizing; Americanized, Americanization, Americanizing. It is unnecessary to point out the particular meaning and proper use of each form of each word since the correct use of the various forms gives no difficulty in practice.

From the general characterization of the socialized school, it is evident that such a type of school might be developed under any form of government and in any nation. A nation with an autocratic form of government might develop a type of school which would be just as truly socialized for the educational purposes of that nation as such a school might be in a democracy. Some of its characteristics would be different, to be sure, from the characteristics of such a school in a democracy. Some of the characteristics indicated in the general description of the socialized school in chapter two would not be found in such a school in a nation with an autocratic government. For example, the details of the recitation described would be somewhat different, for such a nation does not wish to develop initiative, originality and independence in all of its people as does a democracy.

While the term socialized may be applied correctly to a particular type of school in any nation, it is evident at once that "democratized" may be used accurately only in describing a school of a certain type in those nations having a democratic form of government, as the United States, France, England, and other democratically governed nations. Thus, it is clear that "democratized" may be properly used to describe a thoroughly socialized type of school in a democracy.

"Americanized", however, has a more restricted use than either of the other words. It may be used with accuracy to describe only the socialized or democratized school, as it is found in America. To be sure the term "Americanized," or more particularly "Americanization," the substantive form of the word, is often used with two meanings which are narrower. It is used to indicate that educative effort which is directed to aiding the naturalization of foreigners and it is also used to express a measure of financial support of education by the general government together with a limited standardization and control of education on the part of the general government. It is with neither of these restricted meanings, however, that we use the term "Americanized" to describe the socialized school as it is discussed in this volume and as it may be developed in America. Rather what is meant by the Americanization of education is the development of the school so that it is adapted uniquely and concretely to further the solution of American problems, the perpetuation and improvement of American institutions and the realization of American ideals and purposes.

From the distinctions in the meanings pointed out above, it is clear that if it were deemed advisable to limit the treatment of the socialized school to just those characteristics which it should possess in America, this text might properly be labelled "the Americanized school". If the socialized school were discussed and described as it might be found in democratic nations only, although other nations than America were considered, this book might have been named "the democratized school".

When either of these three words is used in any form, it will be applied to the socialized school. The distinctions set forth will aid in their accurate use and interpretation in the following discussion.

The essentials of the socialized school will be indicated here in outline only. This general view will enable the reader to fit the details in the treatment which follows, into their proper place. From the above discussion it should be clear that the essential factors of a socialized school will be the same even though their characteristics vary whether this type of school be in America, in any of the other democratic nations or in a nation with an autocratic government.

The first requisite of a socialized school is a right body of objectives. It is only as ends, purposes, goals, objectives are set up for achievement that an institution, in this case, the socialized school, can be developed through which to realize them. The objectives which society wishes achieved by the school must be carefully determined in the most expert and fundamental fashion. Further, these objectives must not be abstract and elusive. They must be grasped as intimately and as concretely as possible.

The second essential of a socialized school is appropriate materials in terms of subject-matter and educative situations, experiences and activities, which are serviceable in the efforts of the school to realize its objectives. The school's curriculum must be determined in detail with reference to the ends to be achieved by the work of the school. The materials to be used in the educative effort are ordinarily indicated in a school document called the course of study.

The third essential of a socialized school is the school plant itself and its equipment including necessary instructional materials. While the course of study and the methods of conducting and teaching the school are prime considerations, adequate equipment makes both for ease and economy in effects and results. Every detail of equipment should be determined in light of the work to be done in pursuit of the objectives sought.

The fourth requirement in a socialized school is proper standards by which to guide the detailed work of the school. By such standards are the procedures in the school and the conduct of the pupils to be judged. By them also are the subject-matter achievements of the pupils to be measured. Proper standards, carefully determined norms, are just as necessary to proper procedures and satisfactory results in education as they are to good work and standard products in an engineering enterprise or in the operation of a manufacturing plant.

A fifth need of a socialized school is suitable methods of working. The methods of administration, or management, discipline, and teaching must all be suitable for effective use in realizing the school's objectives in view of the materials to be used and of the guiding standards. The methods in use must not only secure the results desired with certainty, but also with economy.

The sixth characteristic of the socialized school which must be attained else the other essentials fall short is satisfactory results. The test of any school is the results it produces The other essentials of the school are more or less theoretically determined and projected. How satisfactory they are depends upon whether the results secured measure up to the ends or goals set for achievement. If they do not, the essentials of the school lying between the objectives projected and the results achieved must be examined that their shortcomings may be eliminated and that improvements may be made until the means employed do actually secure the ends set up for realization as proven by the results secured.

It is perfectly evident that any school which society will maintain in operation must be an economical institution. It must be as economical as possible of the time and energy of pupils and of the money of the tax-payers. It is so necessary that the school meets this requirement that it may very properly be regarded as a seventh indispensable characteristic of the socialized school. It is clear, of course, that it is not an essential which is strictly co-ordinate with the first six indicated. It is not determined upon the same basis. It is an essential which pervades the entire educative process and operates in a regulative way particularly with reference to the second, third, fourth and fifth essentials of the socialized school. For example, it compels a careful selection of materials under the second essential, dictating that superfluous materials must be eliminated in the interest of reasonable economy. Society's concern in reference to economy likewise dictates that the standards imposed and the methods employed shall be such as to insure that waste shall be avoided in achieving the necessary results.

Experiments are in progress in South Africa with a view to ascertaining the possibilities of flax production in Russia and Ireland, it is understood, is the primary cause for the search for a new source of supply. An English expert has selected the western part of Cape province as the most likely section in the Union for flax growing, and Russian seed has been distributed to a number of farmers for experimental purposes. The growth has been very satisfactory, and it is possible, writes the United States Trade Commissioner at Johannesburg, that these experiments will finally result in the opening up of a new field for South African Agriculture.

What American Financiers think of German Credit.

By "L. O."

With the world's surplus funds in American hands, the question of German credit depends largely for its answer on American bankers and financial authorities. In order to find out what the attitude of such representatives of American finance is at present, the Literary Digest sent out, in the week following the success of the Austrian Loan, (the quota assigned to the United States was absorbed within fifteen minutes) a series of questions to bank directors and other persons in a position to gauge the trend of American opinion on the subject of a possible loan to Germany. The replies are interesting not only because of their source and the subject they deal with, but because of their widely diverging views as well.

To the questions—Could Germany borrow as a loan for reparations, in what countries could such a loan be floated, what security in the way of resources and control of expenditures could be offered to creditors, and what would the American investing public's attitude be toward such a loan, the Vice-President of the Guaranty Trust Company and President of the International Chamber of Commerce, Willis H. Booth, replied cautiously: "If the terms as finally adopted give reasonable assurance of a continued peace, and in the minds of the average investor are reasonable and practicable, and the method of collection does not promise impractical complications, then such loans as are needed could doubtless be worked out, but prior to the determination of these points, it would be merely conjecture to express an opinion as to what should be done."

In the opinion of the President of the Mechanics and Metals National Bank of New York, everything depends upon Germany's reaching an agreement with France, as to the amount of reparations. He believes that, once this question is disposed of, a loan to Germany could be agreed upon both as to security and terms to which investors of England, the United States, France and the smaller countries of Europe would readily subscribe.

The note sounded by Frank Vanderlip is characterized by the Digest as "distinctly doubtful". "Germany," he remarks, "might have borrowed a year ago, but events have travelled too far to make it feasible now. Development of serious disorder is to be looked for in Germany under the pressure of the misery which a decline in her industrial activities and the development of large unemployment will certainly induce," this financial authority believes.

Even more pessimistic are the Chicago bankers. The Chairman of the Board of Directors of the First National Bank of Chicago sums up his views as follows: "Germany's credit as such is not good. There is political and industrial disorganization due largely to the treaty of Versailles, and I do not see any possibility of a recovery of such a nature as to enable Germany to pay either interest or capital on any international loan until the political situation has been adjusted."

The problem of the German Loan is not one of guaranties or of material resources or of investment return, but fundamentally one of character, the Vice-President of the Union Trust Company of Cleveland asserts in his reply, and he characterizes Germany as an impenitent thief, and upbraids her for debasing her currency, which, he charges, amounts practically to repudiation of her entire debt. According to this bank director, the American investor will take the attitude that "the only possible basis of any commercial or financial relations with a nation so bereft of morals in its business dealings is through an outright receivership under the direct authority and control of the allied Governments, with complete control of Germany's liquid resources, and administration of her finance."

Reflecting the opinion of the Englishman Maynard Keynes, Albert Wiggin, President of the Chase National Bank of New York, writes:—

"Even if it were possible for Germany to borrow twenty or thirty billion gold marks in Great Britain and the United States, it is not clear how this vast sum could be suddenly transferred to France in such a way as to benefit the French Treasury on a scale at all commensurate with the sums borrowed or the effort involved. If the German Government could draw cheques against British and American balances for this amount and turn them over to the French Government, the French Government could not convert them

into francs suddenly for the purpose of paying for its own internal borrowings connected with the reparations, without precipitating violent disorders in all markets, and the French Government would realize in francs only a fraction of the franc value of the loan at the time it was made.

"Any fundamental solution of the reparations problem would seem to involve a programme of gradual amortization. The amount of payments, which Germany can make in interest and principal on reparations account, must, in the long run, be limited by the fiscal surplus which Germany can build up, *i.e.*, the excess of taxation over public expenditures in Germany; and the export surplus which Germany can build up.

"A moderate loan to Germany, the service of which shall have priority over reparations payments, may be necessary as part of a comprehensive settlement of the reparations programme, as a means of tiding Germany over the period of financial reorganization. No vast credits could be granted to Germany, however, until financial reorganization was really accomplished."

Factory Inspection Principles to be laid down.

The Governing Body of the International Labour Office has decided to place only one question on the agenda of the next Conference, which will be held in Geneva in October, 1923. This question is "General Principles for the Organization of Factory Inspection". On deciding to place this question on the agenda, the Governing Body was guided by Article 427 of the Treaty of Versailles, which lays down the following principle as one of the questions of special and urgent importance for the regulation of conditions of labour: "Each State should make provision for a system of inspection in which women should take part, in order to ensure the enforcement of the laws and regulations for the protection of the employed." In the last paragraph of the Article the High Contracting Parties declare that in their opinion the principles mentioned in Article 427 are well fitted to guide the policy of the League of Nations, and that "if adopted by the industrial communities who are members of the League, and safeguarded in practice by an adequate system of such inspection, they will confer lasting benefits upon the wage-earners of the world."

It will thus be seen that the treaty of Versailles does not merely propose the institution of a system of factory inspection in every country as one of the most important and urgent measures for the regulation of conditions of labour, but actually regards such a system as a necessary condition for the successful application of all the other principles laid down in Part XIII. As the Treaty itself proposed the question of factory inspection as one of those to be dealt with by the International Labour Organization, it was inevitable, as the Director pointed out in his report to the Third Session of the Conference, that the Organization should at some time or other discuss it.

The importance of instituting an organization for enforcement and supervision which is approximately equal in effectiveness in all countries is increasingly felt as a larger number of the International Labour Conventions are ratified. Such an organization would remove one of the most serious objections which have been made to the system of international legislation set up by the Peace Treaty, namely, that the International Conventions do not in practice have the same effect in the different countries which ratify them because they are not observed to an equal extent. If the Conference were to lay down definite principles as regards this question, the Conventions would be more completely and effectively enforced, and increased validity would be given to one of the most important arguments in favour of international legislation, namely, that it prevents unfair competition.

The International Labour Office has now sent all the Governments a questionaire dealing with the general principles for the organization of factory inspection. The questionaire is preceded by a detailed account of the purpose of factory inspection, the duties and powers of factory inspectors, and the system of organization in the majority of countries. The report states that the Government Body does not desire to ask the Conference to lay down strict regulations for the organization and work of the factory inspection system in all countries. It is rather proposed to study the lines on which the system has been instituted and the actual daily work of the inspectors in each country with a view to ascertaining the fundamental principles for the satisfactory organization of a system for supervising the enforcement of labour legislation.

Woodworking Machinery.

The Engineering Editor of "Timber and Woodworking Machinery" writes an interesting article on this subject in the Special Supplement of "The Times". He says:—The record of progress in the arts of converting timber from the log, in fashioning the prepared and semi-prepared material into commercially saleable goods, is, he says, continuous and unending. There are, even to-day, no more signs of practical finality having been reached than was the case twenty, thirty, or forty years ago. What is new to-day is comparatively old to-morrow; woodworking machinery engineers are ill-content to rest on their laurels, and are still ceaseless and untiring in their efforts to reach perfection.

Within the last decade—in spite of the war and its aftermath—progress, in a laboratical, metallurgical, and mechanical sense, has never been more marked, and the improvements effected never more important, while the advantages accruing therefrom are almost wholly with the user. The latter now gets better value for his money, a very much more reliable and efficient machine, a higher productive output, and generally more satisfaction from every point of view. The one distinctive and outstanding aim has been a higher degree of efficiency combined with the elimination of all that stood for waste in power, time, labour and money. And the results are crystallized in modern woodworking machines.

Woodworking machinery can, from a utilitarian viewpoint, be grouped under three separate and functionally distinct classes. Under the first come those types of machines which deal with the log from the growing tree, felling and rough shaping *in situ*. The second group comprises that class of machinery used for converting the log into scantlings and flitches, planks and boards, as the case may be, and for producing flooring and matchboarding—to the sawmiller finished goods, but to the manufacturer, the joiner, etc., raw material. Then under the third group come the multifarious types of machines devoted to the forming, shaping and finishing of wood goods, joinery, cabinet-making, etc., which is by far the largest and most comprehensive of the three sections.

Felling the Timber.

When woods or forests have to be cleared of growing timber the process involved to-day is vastly different from the laborious and costly methods that ruled a few years ago. Then hand-labour, the axe and the cross-cut saw, were employed, and many preliminaries accompanied the actual felling of a tree. To-day a petrol-driven tree-feller is drawn on to the site; it is set alongside the standing timber, the little internal combustion engine is started up, the saw is set to the butt of the tree, and if the latter is anywhere in the neighbourhood of a couple or three feet in diameter it is lying prone and ready for trimming and lopping within 60 seconds.

A good example of this machine is the "Ransome" combined tree-feller and log cross-cut saw. It is readily converted from a tree-feller to a corss-cut saw, or *vice versa*, in a few minutes, by simply undoing four bolts, turning the head of the machine at right angles on a machined pivot, and replacing the four bolts. The whole operation can easily be carried through in five minutes. Portability is one of the essential features. The machine is mounted on four strong and wide road wheels fitted with roller-bearings.

Formerly prepared joinery material, such as doors and frames, window frames and sashes, and other builders' woodwork, had to be produced on several different machines, the planks or boards trued up on a surfacer, put through a thicknesser, and finally grooved and moulded on a vertical-spindle machine—admittedly a slow and costly process. To-day, however, the whole of these operations can be done by one machine, known as a moulding machine, a representative example of which is Robinson's "R D" Moulder, which has just recently been designed by Thos. Robinson and Son, Ltd. of Railway Works, Rochdale.

The Horizontal Band Saw.

Of all the improvements effected in woodworking machinery for the conversion of timber none has been more marked or fraught with greater importance than that of wide-band saw work. This development is due wholly to the use of better quality, wider and thicker saw blades, high speeds, and the many mechanical refinements introduced which have permitted a very much greater output, together with a saving of kerf. Hence a log-band saw has now almostly entirely superseded fast-feed circular saws for conversion work.

The writer well remembers when an average price of 5s. per 100 super feet of conversion

sawing was not considered out of the way. To-day, however, by the aid of the horizontal log-band saw 2,500-3,000 super. feet of elm and oak boards can be put at a cost of from seven to eight shillings. The value of the boards saved, in consequence of the very small saw kerf, is now sufficient to pay the cost of working many times over.

The waste in sawdust by the band saw is much less than that made by vertical and horizontal reciprocating frames and only about a quarter of that of the large circular saws used on rack benches, while the horizontal log-band saw has an output many times greater than any of these machines. As a horizontal log-band saw cuts only one board at a time, the sawyer is able to see how the log is developing, and to convert it to the best advantage, which cannot be done with a vertical log frame. Further the cost of foundations is much less in the case of the horizontal band saw, as it is fixed on the ground level, and the only foundations required are a few cubic yards of concrete; whereas a vertical frame requires extensive excavations and heavy brick or masonry foundations, costing under the most favourable circumstances a considerable sum of money. The horizontal band saw will convert logs of any size even up to 6 feet or 7 feet in diameter.

When the log has been roughly converted into large flitches, deals or battens, still further conversion may be necessary before the material is fit for producing saleable wood goods or to meet general requirements. It is then customary to re-saw it into more adaptable sizes or sections. This operation is generally done on a band re-sawing machine.

Messrs. Thomas Robinson and Son, Limited, have recently produced a new type of band re-saw, capable of accurate sawing and producing deals, battens, and large flitches at varying rates of feed up to 200 feet per minute. The largest flitches can also be flat-cut, for which purpose the vertical feed-rollers can quickly be removed. Pitch pine and other squared logs are easily handled on it. It can also be readily adapted for cutting round logs if required.

General Purpose Machines.

To attempt to describe a full series of general purpose machines used in the various phases of woodworking, would be impossible within the present scope, and it must suffice to present one or two of the most modern and important.

A machine made by J. Sagar and Company, Limited, of Canal Works, Halifax, is adapted for performing the many and varied operations coming within the category of boring and mortizing—a valuable machine in cabinet factories, railway carriage and motor body building shops, joinery works, wheel-wrights' and builders' shops, etc. It is eminently modern in that it embodies the recently introduced chain-cutting feature—a feature that has superseded entirely machines using either the reciprocating chisel, the rotary chisel, and the hollow chisel with internal rotary bit.

The advantages of chain-cutter motorizing may be briefly summarized as follows:—No preliminary boring is necessary; no driving or cleaning out of cores; clean work; no reversing; no shock or jar to the operator or to the machine.

Another machine designed for a multitude of operations is the high-speed boring, recessing, housing, and stair stringing machine, made by Wadkin and Company, of Leicester. But this title by no means describes its usefulness nor yet its sphere of operations. It will do such work as drilling, shaping, working inside or outside edges of straight, circular or irregular mouldings, chamfering, grooving, panel-raising, tenoning, slot mortizing, general pattern making, etc. The machine can be quickly changed from one operation to another, and this ready adaptation actually creates work for it that otherwise would be done in a laborious way by hand. The makers claim that it is the only machine of its type in existence.

Higher Speeds.

It is now more than ever recognized that to handle materials in an easier or a quicker way is to economize labour and build up a trade on lower oncosts. In addition the production costs are reduced and output is increased. In the case of woodworking machinery this is being done chiefly through higher speeds, a notable example being the single-spindle moulding machine. Always regarded as a machine requiring a high rate of speed, a decade or so ago, 3,000 revs. per minute was considered a maximum. To-day, however, a spindle speed of 5,000 to 6,000 is not accounted unduly high, while some models are now made to run almost double this. Maximum cutter speed is well exemplified in the "White" single-spindle moulding machine, the product of Thomas White and Sons, Limited, of Laighpark, Paisley, who claim that at this high speed a perfect finish, with or against the grain of the wood, can be guaranteed; the result being a better, a truer and a smoother finish in far less time, and with less subsequent sanding.

Co-operation in the United Provinces, 1921-22.

By "Rusticus."

As our readers may remember, there have been times during the last few years when we have almost despaired of co-operation in the United Provinces. So many societies, which had been started in the first flush of enthusiasm, were being wound up that it began to look as if the foundations of the whole movement had been laid on sand and the superstructure was in imminent danger of collapsing. Shaik Makbul Hosain's latest report is distinctly reassuring. It is true that the liquidation of societies still proceeds apace, the registration of 104 societies being cancelled during the year as against 111 the previous year. It is also true that the classification of agricultural societies shows how much room for improvement still remains for, of the 2,908 societies, which were audited during the year, 345 were classed as poor and 21 as bad against 355 good ones and only 8 specially good, the remaining 1,489 getting no higher than 'fair'. Our main reason for regarding the co-operative outlook in the United Provinces as more cheering than it has been for some years past is the marked improvement in collections. The percentage of the arrears to the total outstandings of central societies fell from 37 per cent to 31.2 per cent. For the dues of primary societies to their central societies it fell from 42 per cent to 34.6 per cent. The figures for agricultural credit societies were even lower. There the arrears were reduced from 35.5 per cent to 29.4 per cent. An exceedingly favourable agricultural year was no doubt largely responsible for the better collections for, almost all through the provinces, the rainfall was not only above the normal, but was timely and well distributed. But there have been years in the past, the favourable conditions of which were not reflected in the figures of collections and the change for the better, must unquestionably also have been due to the policy of special caution and watchfulness adopted by the Registrar and his staff, who took timely warning from the course of events in the neighbouring Central Provinces, where a policy of unfettered expansion had almost ended in irretrievable disaster.

The policy of caution and watchfulness makes, however, the task of the reviewer a hard one, for it means that there is little of interest to note in the history of co-operation in the United Provinces in 1921–22. The number of societies increased from 4,483 to 5,128, agricultural societies contributing 635 of the increase, membership increased from 115,142 to 133,350 and working capital from Rs. 129.6 lakhs to Rs. 144.3 lakhs. Neither the working of the central banks nor that of the primary societies presents any new features. Non-credit societies are still woefully few in number. Of central societies falling under this head, there were during the year only two agricultural supply societies, though another was registered before the report was written, and one credit co-operative store. The Central Agricultural Supply Society at Hardoi is flourishing and sold seed and implements to its members to the value of Rs. 12,960 on which it made a profit of Rs. 1,942. The Hindustan Central Co-operative Store has made, but little headway, but it is hoped that the help of an Industrial Survey Officer, who has been lent by the Director of Industries, will result in progress. There are 28 non-agricultural non-credit societies. Three of these are housing societies, none of which has yet started work, one is productive society of carpenters which made a good start and finished the year with a profit of Rs. 241, five are productive societies of weavers, five are college stores, of which the Muslim University Store at Aligarh did good work and fourteen are general stores of which five received commendation from the Registrar. Here, as elsewhere, difficulty has been found in securing competent business management. The Government rightly comment, as we have done so often, on the backwardness of this branch of co-operation. They also point how much can be done by co-operative housing societies to solve the problem presented by the acute shortage of houses in the large cities. The example of Madras, where a large amount, Rs. 4 lakhs, if we recollect correctly, has been earmarked for loans to this class of society may be commended to the notice of the Government of the United Provinces.

Marked progress was made in the organization of societies for the depressed classes, the number of which increased from 92 to 128, the membership rising to 1,939. It has to be remembered that these special societies are not the only ones which minister to the needs of this backward section of the community as most of the village societies permit its members to join them.

Some advance was made in the organization of agriculture on co-operative lines. We have referred to the successful work of the Central Agricultural Supply Society at Hardoi. Similar societies have been formed at Roorkee and Jewar, whilst several central banks have also paid special attention to spreading the use of improved implements, manures and good seeds amongst their members. Efforts to form societies for the joint sale of produce have not made much headway, the great obstacle here, as in the case of stores, being to find trustworthy men who are willing to manage the business either voluntarily or on remuneration. The Registrar might well have given more information both in regard to agricultural non-credit co-operation and in regard to supervision. There appear to be nine guaranteeing unions, but not a word has he to say about the way in which they worked. Having made so much progress in getting societies back to the straight and narrow path of financial rectitude, he should now be able to devote more attention to general development, and we therefore expect from him next year a report which is not quite so bald as that now under review.

The Indian Tariff Board.

In the course of a resolution issued on July 11, the Government of India announce the appointment of a Tariff Board for a period not exceeding one year, in the first instance, to carry out the investigations resulting from the acceptance of that resolution and to make recommendations thereon.

The following gentlemen have agreed to serve on the Board:—President: Mr. G. Rainy, R.C.I., C.I.E., I.C.S. Members: The Hon. Mr. V. G. Kale, Professor of Economics, Ferguson College, Poona and Mr. P. P. N. Ginwala, M.L.A., Barrister-at-Law. Rai Bahadur S. S. Banerji, Assistant Secretary, Commerce Department, has been appointed Secretary to the Board.

The Government of India will select the industries to be taken up for investigation and determine the order of the inquiry, and it will be the duty of the Tariff Board after such examination as it thinks necessary to make recommendations regarding the protection (if any) to be extended to those industries, and the nature and extent of the protection.

Firms or persons (other than those referred to in the next paragraph) desiring that the industries in which they are interested should be investigated by the Tariff Board should apply to the Secretary to the Government of India in the Commerce Department with their applications. They should send up a full statement of the reasons why they consider that protection should be extended to the industry.

The Board will assemble immediately at Simla as recommended by the Fiscal Commission in paragraph 107 of its report. The Board will exmine first the question of extending protection to the manufacture of steel in India. In considering this question the Board will take into account the effect of any recommendations it may make on the industries dependent on the use of steel, and in particular it will consider how its recommendations will affect the industries referred to in para 9 of the report of the Railway Industries Committee and whether those industries should be accorded protection. Firms or the industries dependent on the use of steel who desire that their views should be considered by the Tariff Board should address their representations to the Secretary to the Board.

The headquarters of the Board will be with the Government of India, but it will visit from time to time commercial and industrial centres in India for the purpose of the investigations which it may be required to undertake. While the steel industry is under examination, the office of the Board will be located temporarily in Calcutta.

For the investigation of other industries, it may be necessary to transfer the office from time to time to other convenient centres. The Government of India trust that the local Governments and administrations will afford the Board all the assistance which it may require, and will comply with any request for the information which may be addressed to them by it.

The three principal iron and steel exporting countries last year were the United Kingdom, which shipped 3,551,000 tons, France, with an export of 2,886,000 tons, and Germany, with 2,500,000 tons.

Resuscitation of Sugarcane in South Kanara.

Before 1907–08 when the Agricultural Department turned its attention towards improving the sugarcane cultivation in this district, that cultivation was of a poor and meagre type. The ryots were growing sugarcane on small plots and the produce hardly reached the markets. There was neither systematized tillage nor heavy manuring which the crop required. The canes were being passed through the time-honoured inefficient wooden mills which entailed loss of a good portion of the juice in the megass. The juice obtained was boiled in a series of small pots heated over a corresponding number of primitive pit-hearths which consumed a considerably large quantity of firewood. The varieties grown were *Hullu Kabbu, Kari Kabbu, and Dasa Kabbu,* which had considerably degenerated owing to bad cultivation practised over a long period. Most of these local canes had a soft rind and consequently were easily attacked and damaged by jackals. There was, in fact, loss at every step, as it were, both in the system of production and the method of preparation for the market. Above all, says the Digest of the Madras Agricultural Department, the low price obtained for the inferior jaggery prepared was detrimental to the profitable cane cultivation. Thus the cane-growers were in a miserable predicament. When the future of sugarcane cultivation was thus uncertain, and hanging in the balance, the Agricultural Department stepped in, in the year 1907–08, and began its work of improvement with what results will be seen from the following summary.

Improvements were thought over in every detail and introduced one after another. A variety of cane, Red Mauritius, which admirably succeeded in the Taliparamba farm was sent out into the district. This variety yielded more heavily than the local canes and was jackal-proof—a special characteristic which this district was badly in need of. It gained its popularity by slow degrees in the beginning. During the course of seven years since the Department began its work in this connexion, the area under the new variety rose to but 424 acres. At this juncture, the great European War broke out in 1914. There was sudden upheavel of prices all round and sugar and jaggery in particular. This circumstance brought the sugarcane cultivators more profits for their occupation than it ever did in the past. This factor helped the Department in its efforts to bring the cane cultivation to the forefront and to help to bring about its extension. This new variety was first popularized in the two central taluks of Mangalore and Udipi and thence it began to spread in other directions. Immense help was rendered in the early stages of the Department's work by the leading citizens of the district, to mention one of whom is Khan Bahadur Hajee Abdulla Haji Kassim Sahib Bahadur of Udipi, now non-official visitor of Agricultural College, Coimbatore, and President, Taluk Board, Udipi, who grew the new cane variety at his own cost for providing planting material to his neighbouring ryots. By 1917–18, this variety became so popular that nearly 90 per cent of the total area under cane, *viz.*, 2,858 acres was under Red Mauritius.

Owing to this being a hard-rinded variety, the wooden mills were found by the ryots to be not up to the mark and the iron mills that were being demonstrated by the Department speedily got therefore into the favour of the ryots. The ryots saw for themselves the larger output of jaggery by the use of iron mills.

The Department further brought to the notice of the ryots the economy both in time and fuel effected by the adoption of improved furnaces and big iron pans. The ryots were not slow to realize the advantages. They could do the boiling with the aid of cane-trash and megass only and had not to pay for firewood which they had to use in the past. Head coolies were engaged by the Department, trained to do the jaggery boiling under the improved methods and sent up to help the ryots. The general adoption of the new furnace was therefore bound to follow as it did.

A little later, Barbadoes sugarcane varieties B-147, B-308, B-6450, B-3412 were sent out from Taliparamba farm and distributed to some selected ryots in central places for trial. These varieties are now being grown very profitably in some congenial soils and the ryots have realized that these contain more percentage of sugar and produce jaggery of by far better quality. They are now slowly extending from place to place.

As the sugarcane crops required heavy manuring so as to be profitable and are very responsive to it, the ryots were convinced of the necessity of using fish manure largely available locally for the crops and they had taken to it, and application of fish manure for sugarcane has become the rule already in some of the

taluks, in spite of the prejudices which the ryots entertained against that manure in the earlier stages of its introduction.

In recent year Fiji and Java Hebbal cane varieties have been sent out to a few ryots for being tested. Such as have tested them have begun to express favourable opinion about them in certain localities.

The combined effect of these several introductions, which are individually profitable, was to bring about the extension of sugarcane cultivation by more rapid strides during the course of seven years succeeding the outbreak of war; and in the year 1921–22 we have about 3,500 acres of sugarcane in this district of which no less than 90 per cent are Red Mauritius and Barbadoes as compared to 1,775 acres in 1909–10. This cultivation is steadily extending from year to year and the old varieties of canes have been almost practically displaced.

The substitution of old wooden mills by iron mills, and of old imperfect hearths by improved furnaces and pans, has been effected almost everywhere except in certain nooks and corners.

A new furnace going by the name of "Sindewahi" is a still newer innovation. It is simpler in construction and more economical in results than the Poona furnace. It has been just introduced by the Department for the first time this year and has already been judged by such as have tried it as more economical in time, labour and expense than the old furnace.

The total economic benefit to the district as a whole from these introductions, *viz.*, adoption of better varieties of sugarcane, use of fish manure, efficient iron mills, improved furnaces and pans, etc., can be estimated at 9.12 lakhs of rupees more into the packets of the ryots every year as a very modest estimate given in the following schedule will show :—

Schedule showing the present additional gain to the ryots in the district per annum from the improvements effected by the Department in the sugarcane cultivation.

Nature of improvement	Area under improvement	Estimated gain per acre	Total estimated gain per annum
	Acres.	Rs.	Rs.
Extension of area under improved varieties*	1,600	250	4,00,000
Replacement of local canes by improved varieties †	2,000	150	3,00,000
Iron mills for crushing canes	3,000	50‡	1,50,000
Improved furnaces and shallow open pans for boiling sugarcane juice	2,500	25 ‖	62,500
			9,12,500

* A modest estimate of the gain as the result of extension of area under improved varieties.

† Improved varieties produce about 1,500 lbs. of jaggery more than local varieties per acre.

‡ Rs. 50 represents the extra juice expressed by the mill equivalent to 500 lbs. of jaggery per acre.

‖ Rs. 25 represents saving of fuel.

World's Largest Generators.

Niagara Falls, the greatest single source of water-power in the United States, will transform more of its great power into electrical energy through the two largest generators ever made. These gigantic generators, being made by the General Electric Company to be installed on the American side of the great Falls, will each produce 87,000 horse-power, or energy equivalent to the muscle power of 375,000 men. Each generator will weigh 700 tons, will stand 35 ft. high, and will have a diameter of 35 ft., and will be the largest generators in the world, both in size and capacity. This is another step in the further development of the water-power resources of New York State. Dr. Charles P. Steinmetz estimates the total undeveloped horse-power of the water-power resources of this State alone as 4.2 million, as compared to 1.3 total horse-power now developed. The 4.2 million horse-power of undeveloped water-power owned by this State, if developed, would save over 40 million tons of coal, or more than enough to operate all industries, public utilities, and railroads, so that coal would need to be used for domestic heating only. In addition, this saving would release for other uses 500 locomotives and 15,000 coal cars now continuously in use to carry this coal, and over 400 million dollars in railway equipment.

The Forest Problems of the British Empire.

We note from a recent issue of the "Canadian Forestry Magazine" interesting particulars of the Empire Forestry Conference which was recently in session. In the forefront of prominent men in attendance at the Conference, held in Canada this year, were Major General Lord Lovat, K.T., K.O.M.G., D.S.O. Lord Lovat is Chairman of the British Forestry Commission, which is carrying out a gigantic programme of reforestation in the British Isles. The English and Scotch forests were subjected to serious depletion to supply war demands, and the work of the Commission is to restore, as rapidly as possible, the forested areas in the United Kingdom. Indeed, the plans indicate that Britain has at last awakened to the necessity that she must provide for the production of a greater amount of home-grown timber.

During the war Lord Lovat was in charge of all the British forestry operations, and associated with him were many men, including Canadians, prominent in the lumbering and pulp manufacturing world. He has many friends in Canada, and it is anticipated that his coming will warm the hearts of many a member of clan Fraser, of which Lord Lovat, as Simon Fraser, is Chieftain. Not only is he a man of great energy, broad vision and outstanding ability, but he is possessed of a most charming personality. The several Canadians who were delegates to the Empire Forestry Conference held in London in 1920, speak very highly of his ability as the leader of that Conference.

Other United Kingdom delegates will be Sir James Calder; R. L. Robinson, O.B.E., Technical Forestry Commissioner; Professor R. S. Troup, Head of the Forestry School at Oxford University; Dr. A. W. Borthwick, Research Officer; Fraser Story, Head of the Intelligence Service; and Dr. J. W. Munro, Forest Entomologist, of continental repute.

Empire Facts.

The British Empire has 700,000 square miles of "effective forests," the remaining area being unprofitable or inaccessible.

Canada has about 50% of the total, India 14%, Nigeria and the Gold Coast 14%, Australia and New Zealand about 8%.

The United Kingdom, the great wood-consuming center of the Empire, has less than one-third of one per cent under forests.

Seventy-five per cent of the forest area of the Empire still belongs to the State and only 25% to corporate bodies and private individuals.

Only 2½% of the forest area of the United Kingdom is State owned.

The Empire's imports of wood and timber just before the war exceeded exports by 150 million cubic feet per annum.

The United Kingdom drew (1909-1913) 88%, by volume, and 83%, by value, of her imports from without the Empire.

Other Notable Visitors.

In addition to these official representatives of the Imperial Government, the Conference has been attended by Lord Clinton, one of the Forestry Commissioners; Lord Chichester, of the English Forestry Society; Right Honourable F. D. Acland, Forestry Commissioner; J. S. Corbett, Secretary of the British Empire Forestry Association, and others.

The Colonial Office is represented by Major R. D. Furse, D.S.O.; Ceylon, by R. M. White, Deputy Conservator of Forests; Nigeria, by J. R. Ainslie, Senior Conservator of Forests; Kenya, by E. Battiscombe, Conservator of Forests; Straits Settlements and Federated Malay States, by G. E. S. Cubitt, Conservator of Forests; and British Guiana, by S. Hohenkerk, Forestry Officer.

The various Dominions are also adequately represented: the Chief Forester from South Africa assisted by a Member of the Chamber of Commerce; India has representation from the Forest Service proper, and also from her Research Institute at Dehra Dun; Australia, by Owen Jones, B.A., Head of the Forestry Commission; and finally, New Zealand, by Captain L. McIntosh Ellis, Director of Forestry.

Conference Aims.

It is the aim of the Conference to find ways and means of making the Empire self-sustaining in its timber supply. This involves careful stock taking of forest resources, the pooling of information in regard thereto, and the establishment of facilities for increasing Empire trade generally in forest products. In many cases possibilities have been neglected purely through ignorance that has prevailed regarding supplies and facilities.

A most important feature of the Conference is to place plainly before the people the actual condition of Empire forestry affairs. In some parts of the Empire forest management is on the basis of sustained yield, while in others cutting is carried on greatly in excess of annual growth, so that the woods capital is being seriously impaired. These and many other related subjects will receive attention at the Conference.

The Conference officially opened in Ottawa on July 25th, and immediately thereafter the Eastern tour to the Provinces of Quebec, New Brunswick, and Nova Scotia, was undertaken. This was followed by Business Sessions held in Ottawa during the week of the 6th to 11th. Following upon the business meetings the Conference started on the Western tour, visiting points in Ontario, Manitoba, Saskatchewan, Alberta and the interior of British Columbia. Subsequently a tour to appropriate points on the main land in Vancouver Island was taken by boat; the Conference finally reaching Victoria where the concluding sessions was to take place.

Late Sir M. KANTARAJ URS, K.C.I.E.

By the untimely death of Sirdar Sir M. Kantaraj Urs, K.C.I.E., which sad event occurred on 2nd October 1923 at Mysore, Mysore loses a prominent nobleman and Ex-Dewan. Sir Kantaraj was a graduate of the Madras University and won through to the high office of Dewan of Mysore by his steady work from the position of an Assistant Commissioner. He was one of Nature's gentlemen. His death will be deeply mourned by all classes of people in the State.

Discuss Softwood Supplies.

The predominating theme for discussion at the British Empire Forestry Conference was "World's Softwood Supplies". Although hardwoods are essential for many purposes, the advantages of the softwoods for all forms of ordinary construction, and especially for the manufacture of paper, the demand for which is constantly and greatly increasing, render them of paramount importance in the economic life of the civilized world.

The Conference was attended by authorities who have been making special investigations regarding softwood supplies. Although the Conference is essentially of an Empire character, and it was desired above all to assist in rendering the Empire self-sustaining in its timber supplies, it is also necessary to take cognizance of similar supplies available in other countries. It is expected that by the conclusion of the Conference, a thorough preliminary inventory of the softwood resources throughout the world will have been completed.

Canada and the Conifers.

It is most appropriate that such a subject should have been chosen for the main discussion in Canada, for that country has been most aptly described as the "Softwood Storehouse of the Empire". By reason of its more northerly location, it enjoys peculiar advantages for the growth of coniferous timber. Although extensive hardwood forests are found in Eastern Canada, particularly, as regards maple, birch and beech, which are present in considerable quantities, it is nevertheless a fact that the economic trees for production and exploitation in Canada are the pines, spruces, firs, cedars, hemlocks, etc.,—all softwood trees.

It must be remembered that, as an essential process in placing lumber on the markets, it is customary in Eastern Canada (where the extensive hardwood forests occur) to utilize the old method of "river driving" to convey logs from the woods to the sawmills. So far, it is, to all practical purposes, commercially impossible to transport hardwood logs for long distances in this manner, and it is this feature which in a measure renders a great portion of our hardwood forests as of problematical value. This particular feature of the situation offers a very interesting field of research, namely, to see whether some means can be provided to render hardwood logs drivable, or else in some manner to devise means whereby they may be taken from the woods to the mills by other methods.

Canadians may feel especially proud of the fact that Canada has been selected as the meeting place of the second Conference. No effort, we note, is being spared to justify this decision, and it may definitely be anticipated that the numerous delegates will return to their respective countries with a very much clearer conception of Canadian conditions, the advantages of Canada as a source of raw forest products, and also of her remarkable development in the manufacture of wood into a great many products.

The world's annual paper production amounts to 14,000,000 tons.

Paper and Paper Making.

Mr. F. Heckford, Chief Chemist and Technologist to Messrs. John Dickinson & Co., Ltd., gave a fascinating address to the members of the South-West London Master Printers' Association on Tuesday, June 5th, on the subject of "The Peculiarities and Pit-falls of the Craft" looking at the matter from the paper-makers' point of view. Mr. E. G. Cole, President of the Local Association, was in the chair, and the meeting was held at Stanley's Restaurant, Lavender-Hill, Battersea.

The Magic Paper-maker.

The subject was handled by Mr. Heckford in a modest and attractive manner and the master printers present were obviously interested in the demonstration and discourse. Not only did Mr. Heckford gave a clear exposition of the process of paper-making, but he actually made a sheet of paper in the presence of his audience. With the aid of a bowl filled with half-stuff as it flows on to the wire, he dipped in a miniature mould and, with a doft shake, fashioned a sheet of paper on the spot.

Exhibiting rag half-stuff and esparto grass and sketching on a board the different fibres, Mr. Heckford described the characteristics of each cotton fibres, with their absorbant qualities, which fitted them for blottings and bulking papers ; linen fibres for writing papers, because they felted closer and made a hard sheet ; hemp fibres, whose strength and opacity adopted them for high class Bible papers ; and wood fibres, which go to make 98 per cent of the paper manufactured. It was explained that mechanical wood fibres, because of their thickness and lack of affinity, readily allowed the water to drain away, and therefore, they were adaptable for fast machines with a speed of a thousand feet per minute. Consequently these fibres were largely used in the manufacture of newsprint. Esparto fibre, because of its thin, short and uniform character, made a nice smooth litho-printing paper.

The Beating Process.

Remarking that the beating process was the most important in the manufacture of paper, since all the ingredients of the sheet must go into the beater, Mr. Heckford said that beating the stuff for 20 minutes produced a blotting paper ; continuing the beating for 9 or 10 hours they got a writing paper ; 24 hours' treatment gave them a greaseproof ; and 48 hours', a beaver board or the body of a motor car. Craft, parchment, coated embossed and photographic papers were then described.

Dealing with difficulties which printers sometimes met with in the handling of their papers, the lecturer mentioned that paper, being a vegetable, animal and mineral compound, shrank or swelled in the absence or presence of moisture and heat because of its plant origin. While the perfect sheet had its fibres lying at right angles, giving equal strength either way, generally the fibres ran 70 or 75 per cent. in one direction, and 30 per cent in the other, so that there was unequal strength. The power of ink and water was enormous, and in attaching the sheet they took the line of the least resistance, entering the paper in the weaker direction.

Rubber Latix.

Answering questions as to the value of rubber latix in paper, Mr. Heckford said this was really a commercial question. Paper-makers did not take kindly to it. Unless users wanted paper with rubber in it, he did not see any particular virtue in the addition. It was very difficult to work rubber into paper, even in small quantities, because it coagulated. Certainly latix gave a paper, which was more elastic, but very often its strength was not increased ; the folding properties ought to be. If people wanted rubber in paper, the manufacturers would supply it. Mr. Heckford gave his audience a rough and ready test for determining the value of comparative papers. This was to crumple the papers in the hand two or three times, rub them, and then note the number of pin holes. The paper with the fewer pin holes was the better paper.

With regard to fluff arising from antique printings, Mr. Heckford observed that excessive fluff would indicate that there had not been sufficient beating. At the same time featherweight papers would always fluff more or less.

A Commercial Question.

Coniferous woods were used by paper-makers, because they were soft and very easily reduced. It was purely a commercial question. Thirty years ago bamboo was spoken of, but even to-day it had not come into its own, or only slightly. So long as papermakers could get wood and grass at their present prices they would not buy bamboo at £15 a ton or any grass for which they had to go into the middle of Africa.

Storing Paper.

On the question of storing paper, Mr. Heckford said, if they could keep the temperature at 60 degrees, winter and summer, he thought they had done everything that was possible, and the paper would retain its 7 or 8 per cent of moisture without much variation. If the temperature rose to 70 degrees a little more of the moisture would be lost; and if the temperature dropped to 50 degrees more moisture would be absorbed. Generally 6 degrees would keep paper in its normal state of equilibrium.

International Co-operative Trading.

We note from the "Co-operative News" that a meeting of the International Committee of the Co-operative Wholesale Societies, constituted by the International Co-operative Alliance, was held at Ghent on 5, February.

It was agreed that so far as possible reliable market information, particularly from Co-operative sources, should be circulated for the guidance of those interested, and that the International Committee should make arrangements with this end in view. At the same time it was clearly understood that reports of this description were only to be regarded as part of a whole and must be treated as helpful merely in forming opinion on the position of any class of goods under consideration.

The Russian representatives reported that the deflation of the Russian rouble on January 1, 1923, to the extent of one million paper roubles of previous issues equalling only one new rouble, affected only the internal currency of Russia, and where Russian Bank notes were concerned they were covered by gold, so that the Western States of Europe were not troubled by this change in currency. Any goods which were bought by Russia, whether on credit or for cash, would necessarily be covered by bills of exchange, which were backed by goods or gold.

Transactions to the value of about two-and-a-half million pounds sterling took place between England and Russia in 1922, three-quarters representing exports from Russia, and one-quarter imports to Russia. Mr. Khinchuk, President of the Russian Central Union of Co-operative Societies (centrosoyus) expressed the hope that the British Co-operative Wholesale Societies and the Centrosoyus would be able to make such satisfactory financial arrangements that the bulk of this business would in the near future be dealt with by those co-operative institutions.

In view of the violent fluctuations of the exchanges and of the impossibility of collecting sufficient capital to command success, it appeared more obvious than ever that it was impossible at the present time to launch an International Trading Wholesale Society with its own resources. It was decided, therefore, to leave this matter for reconsideration at a more appropriate time, and to carry on at present with the collection of statistics and the circulation of any suitable information which might be serviceable with a view to the future.

From January 1 to the end of September 1922, the value of purchases of goods imported into their respective countries by the various European Wholesale Societies was reported to be £21,490,090. Of this amount, seeds, cereals, grain products, etc., accounted for £7,612,116; animal fats and meats, dairy produce, oils, etc., for £8,352,161; colonial and tropical produce, £4,624,839; textile and other manufactured goods for £475,610; timber, minerals and chemicals £425,364.

Travancore amongst Indian States has long had the reputation of the most literate State, the general level of literacy being 29 per cent which is far more than that of any British Province. Female education has also progressed side by side, and while the lack of progress in education of Indian girls has been the theme of enlightened publicists and expert educationists throughout the country, the State of Travancore has been flooded with such a plethora of girl graduates that the cry of unemployment amongst girls there has become almost as insistent as it is amongst Bengalee boy graduates. The only avenue till now for the Travancore girls had been the Education Department, and its maximum capacity of employment having long been reached, the girls are now on the look-out "for fresh fields and pastures new".

The wood pulp and paper industry in Ontario, Canada, continues to expand, the annual value of the production being now £12,000,000. The capital invested in the pulp and paper mills of Ontario amounts to over £17,000,000.

Trade Terms.

Shippers and others will doubtless be interested in the following definitions of trade terms, as laid down before the British National Committee of the International Chamber of Commerce.

F.O.B. is understood to mean in the United Kingdom and throughout the British Empire that the goods are provided "free on board a vessel" and has no other significance. In this case :—

(A) The seller must—1. Meet all charges incurred in placing goods actually on board the vessel. 2. Provide the usual bill of lading. 3. Be responsible for all loss and/or damage until the goods have been placed on board the vessel. 4. Comply with the Sale of Goods Act, 1893 [Pt. III, Sec. 32 (3)], which reads as follows :—"Unless otherwise agreed, where goods are sent by the seller to the buyer by route involving sea transit, under circumstances in which it is usual to insure, the seller must give such notice to the buyer as may enable him to insure them during their sea transit, and, if the seller fails to do so, the goods shall be deemed to be at his risk during such sea transit."

(B) The buyer must—1. Be responsible for all loss and/or damage which may occur from the time that the goods are placed on board the vessel. 2. Be entirely responsible for all loss in subsequent movement of the goods and/or charges.

F.O.T. is understood to mean "free on trucks". F.O.R. is understood to mean "free on rail". (Both of these terms have the same significance in regard to the obligations involved.) In this case :—

(A) The seller must—1. Deliver the goods free on the truck. 2. Obtain from the transport agent a waybill.

(B) The buyer must—1. Take full responsibility for the goods from the moment they are placed on the trucks. 2. Pay all transportation charges. 3. Handle all subsequent movement of the goods.

F.A.S. is understood to mean that the goods are delivered under the ship's tackle. In this case :—

(A) The seller must—1. Pay all charges to place the goods alongside the ship and so that they can be handled by the ship's tackle. 2. Provide the customary dock or warfinger's receipt.

(B) The buyer must—1. Be responsible for all loss and/or damage incurred thereafter. 2. Handle all subsequent movement of the goods and be responsible for all charges. 3. Pay all demurrage and/or other charges which may be incurred after the conditions prescribed in (A) 1 above have been fulfilled.

C. & F. (other than bulk cargoes) is understood to mean that the goods are to be provided by the seller with all charges and freight paid, but *not* insurance. In this case :—

(A) The seller must—1. Pay all transportation charges to the agreed destination. 2. Be responsible for all loss and/or damage until delivery of goods into custody of shipowner. 3. Deliver to the buyer or his agent a clean bill of lading to the agreed destination.

(B) The buyer must—1. Be responsible for all loss and/or damage after goods have been placed in the custody of the shipowner and for taking out of all necessary insurance. 2. Take delivery and pay costs of discharge, lighterage and landing at port of discharge in accordance with bill of lading clauses. 3. Pay all import duies, customs and wharfages, if any.

C. & F. sales, when referring to coal, coke and patent fuel in bulk, bind the seller to supply the stipulated cargo free on board ship at loading port, and to provide a contract of affreightment in accordance with the conditions of the contract of sale, or, failing such contract, on customary terms, the buyer arranging the insurance himself. On the cargo being loaded the seller has to get bills of lading signed in the usual form as soon as practicable, which he endorses in favour of, and sends to, the buyer with an invoice at the C. & F. price from which he deducts the freight, this being payable by buyer on delivery. There is no obligation upon the seller to replace the cargo in the event of loss or damage. (The above are the customary conditions implied in C. & F. sales. They are sometimes modified by special clauses.)

C.I.F. is understood to mean that the goods are to be provided by the seller with all necessary charges, insurance and freight paid. In this case :—

(A) The seller must—1. Pay all transportation charges to the agreed destination. 2. Be responsible for all loss and/or damage until delivery of goods into the custody of shipowner. 3. Take out and pay all necessary marine

insurance. 4. Deliver to the buyer or his agent a clean bill of lading to the agreed destination and marine insurance policy or negotiable insurance certificate.

(B) The buyer must—1. Be responsible for loss and/or damage thereafter and must make all claims to which he is entitled under insurance. 2. Take delivery and pay costs of discharge, lighterage and landing at port of discharge in accordance with bill of lading clauses. 3. Pay all import duties, customs and wharfage charges, if any.

C.I.F. sales, when referring to coal, coke and patent fuel in bulk, impose the same obligations on seller and buyer as under C. & F. clause for coal, coke and patent fuel in bulk, but in addition the seller has to provide and forward as soon as obtainable after shipment a policy or negotiable certificate of insurance against the usual marine risks for the net balance due as per invoice, plus an agreed-upon percentage for assumed profit in favour of buyer, or failing agreement, 10%. (The above are customary conditions implied in C.I.F. sales. They are sometimes modified by special clauses in contracts of sale.)

Prof. Cassel on the Gold Standard.

Professor Gustav Cassel, whose name is so well-known in connection with questions relating to currency and exchange stabilization, which form some of the chief of our post-war problems, recently addressed a large meeting at the London School of Economics on the subject of "The return to a gold standard". By this Professor Cassel does not mean that each country should return to the particular gold standard which existed before the war, but merely that they should establish a state of equilibrium between their own currency, whatever it may be, and gold. That is to say, there should exist a constant relation between what can be bought within the country for a given number of units of the currency and what can be purchased elsewhere with a stated quantity of gold. In order that such a state of equilibrium may be reached, he pointed out, that not only must the general price level be practically constant, but that a proper relationship must exist between the various groups of prices—to take a simple case, between manufactured goods and raw materials, or between home and imported goods—and wages must be adjusted.

Primary Pre-Requisites.

The primary pre-requisites for the establishment of equilibrium are currency regulation, a balanced Budget, and such a balance of all foreign payments as will not necessitate the export of currency to cover them. The first of these currency regulations is, of course, the prime factor, and Professor Cassel believes that this is in the power of all Governments. The future of the currency in any country depends entirely, he maintains, on the financial policy adopted, and he deprecates strongly the action of those in authority who, "like children looking only on the pleasant side of the picture," trust to some mystical force to restore the value of their money to its original level. This return is, for most countries, illusory, and in their case the only escape from an ever-increasing burden of debt, is devaluation. For those countries like England, Holland, Sweden, and Switzerland, when the difference between the present value of the currency and its former parity is slight, the choice may be left to the countries concerned, but everywhere steps should immediately be taken to get on to a gold basis, either by devaluation, or by restriction of currency and credit.

Wonderful Electric Welding.

An ingenious welding equipment was designed during the war for fixing brass studs to iron-plates. It was essentially necessary to fix hundreds upon hundreds of studs to the bulkheads, and the old way of doing it, was by cutting holes in the bulkheads and screwing in the studs. The British Admiralty, in order to save time and labour, encouraged some experts to simplify the problem of electric welding, and they perfected a most ingenious machine by which the whole operation of placing the stud, striking the welding and pressing the stud on the plate were performed by clock work. This satisfactory result led the inventors to apply the same method to other kinds of welding. They have succeeded by using compressed air in producing an equipment which will hold studs of almost any kind of metal.

"The Observer" (London) understands that Courtaulds have perfected a process for the manufacture of artificial cotton, but at present the cost of production is too high to enable it to compete with the real article.

Revision of Taxation.

The Executive Council of the Association of British Chambers of Commerce has addressed a letter to the Prime Minister urging the appointment of a Royal Commission to review the whole question of national and local taxation. The Commission, it suggests, should be representative of political, financial and industrial interests, with instructions :—

(*a*) To investigate the cost of collection of various forms of taxation, and to recommend what steps, if any, should be taken to reduce such costs in each form of taxation, so as to increase the net yield.

(*b*) To investigate the line of demarcation between national and local taxation, so as to confine local taxation to the amount required for meeting expenditure appertaining strictly to the localities on which such local taxation is imposed.

(*c*) To investigate the relative contributions to the national income of productive industries (including agriculture) and trade, commerce, and foreign investments.

(*d*) To investigate the relative numbers of those whose livelihood depends upon productive industries (including agriculture) and trade, commerce, professions, Government offices, foreign investments, and other non-productive sources of income.

(*e*) To ascertain whether, to what extent, and by what means, taxation may be adjusted to maintain the national income unimpaired, while ensuring employment of all workers, by reduced relative taxation of those industries or occupations which otherwise could not continue, and whose disappearance would cause unemployment.

(*f*) To investigate and recommend what concessions, if any, should be granted to taxation of new industries, to encourage the establishment of further productive industries and consequent increased employment of labour.

(*g*) To review generally the form, economical method of collection, incidence, relief, and relative adjustment of national and local taxation.

Taxation in India.

Two non-official resolutions appeared on the agenda of the Council of State which reassembled at Simla on July 1923 with a fair attendance of members.

Sir Maneckji Dadabhai moved that an enquiry be made into the whole system of taxation in India with a view to its thorough revision on an economic, equitable and scientific basis with special regard to the taxable capacity of the people. He maintained that our present system of taxation was not strictly scientific, but was more or less a haphazard growth regulated more by the needs of the State than by economic or fiscal principles. A taxation suggested by a fiscal policy dominated by solicitude for trade interests of countries other than those of India, however closely associated they might be as units of the same Empire, must have the defects of being unscientific and contrary to the accepted canons of taxation. The duty of the industrial alcohol and the excise duty on cotton goods made in India were two glaring instances of taxation designed in the interests of foreign manufacturers. The super-tax realized upon the incomes of railway companies checked new construction and development of lines already in existence, contravening one of the first conditions of scientific taxation.

As regards land revenue, there had been significant admissions as to the large increases. If the rule was that at every periodical settlement land revenue must be increased, then settlement authorities were likely to strain the point in favour of the theory of unearned increment. The existing policy of the Government to exempt agricultural incomes from income-tax was assailable from many points of view. There was very little warrant for exempting a large class of people who derived fabulous incomes from the possession of thousands of acres of rich and valuable land. It was also notorious that all rich persons of the Hindu and Muhammadan communities dying escape death duty which was being paid by all classes of community. The domain of death duty undoubtedly offered attractive possibilities far greater than additions to the existing over-burdened direct taxation, and Sir Maneckji thought that a system could easily be devised, whereby, in the case of a joint family, a fiscal statute might be made uniformly operative without the destruction of the right of survivorship or any prejudice to the maintenance of co-parcenary status. Taxes were not also uniformly moderate, and contravened the practical rule or keeping out the pockets of the people as little as possible over and above what it brought into the public treasury of the State. The income-tax was

ssessed altogether on a wrong principle. ncomes in India were very poor, and even hose who had to pay a tax ranging from 2 to thousand rupees found the present rate eally burdensome, specially with the increased ost of living. Therefore, exemption to the ower middle classes, whose income was only Rs. 6,000 a year, ought to get a rebate at least 2 to 15 hundred rupees. Similarly with the owest income of Rs. 2,000, the assessee should e assessed to only Rs. 500. Excessive super- ax acted prejudicially against industry and nterprise and had all the ugly features of a eavy capital levy. Taxes imposed even upon rticles which were either the necessaries of ife or of such widespread use as to be unavoid- ble even to the poor were unequal in their ncidence upon the different classes. It was travesty of scientific taxation to tax salt n the interests of sound economy, of good Government and of the suffering poor. A serious attempt should be made to conduct an enquiry by a committee of experts of the Finance Department with the aid of non-officials of proved financial merit and know-ledge.

Sir Purushottamdas Thakurdas opposed the resolution, although it looked most fascinating. If the same resolution had been moved by a Government Member, there would have been aroused a suspicion that the Government wanted to get more revenues and that the resolution was only a thin end of the wedge in that direction. Fortunately, Sir Maneckji Dadabhai was not an official, and the speaker hoped that the Government would not accept it. There was no country in the world where the system of taxation was perfect and equitable to all. To call the death duty, which had been good enough to Government and people all these so many decades, a fiction was really shooting beyond the line. He wondered why there should not be a system of taxation by which they could levy a tax on leisure, that is, on those who worked less than 11 months in the year (Laughter) and on those who worked more on the hills than in the plains (Laughter), where lived the 33 crores of people in whose interests this resolution was supposed to have been moved. Only a few days ago, Sir B. N. Sarma opposed on financial grounds the appointment of a Committee to enquire into the economic condition of the agricultural classes, and Sir Purushottamdas asked whether the same arguments did not supply against the present motion. He said: We want retrenchment. We want to balance the Budget without any increase in taxation, and until there is a surplus, we cannot seriously consider the present suggestion.

Mr. S. Vedamurti, in a short maiden speech, supported the resolution urging the special claims of Burman conditions within the scope of the enquiry. The only means of acquiring equality in taxation lay, he said, in the introduction of the inheritance tax which existed in England, the United States and Australian Colonies, and he did not see why there should be objection to it. If it had not been introduced before, it was because of opposition from quarters represented by persons like Sir Purushottamdas Thakurdas.

Proceeding, Mr. Vedamurti referred to several local taxes in Burma, including the poll tax, which, he said, were analogous to taxes which existed in mediæval ages, and urged that there should be no such capitation tax as a source of revenue.

Mr. Lallubhai Samaldas opposed the resolution as it meant a costly roving Commission touring from district to district and taking about 20 years to come to the end of its labours.

Mr. MacWatters, on behalf of the Government, supported the resolution. The Government, he said, intended to relax no effort to carry out the recommendations of the Inchcape Committee and to explore further avenues of economy. At the same time, there was a demand for a new Fiscal policy and a Tariff policy, which would greatly affect the present customs duties. The incidence of taxation had been disturbed as between direct and indirect sources of taxation and as between different classes. The new orientation in Tariff and Excise policies had necessitated the adjustment of the existing taxation and the finding of new sources on a broadened basis. With that end in view, the Government of India had already addressed the local Governments and invited their co-operation in a comprehensive and scientific enquiry into the whole question of incidence of taxation. When the replies were received, the Government of India would certainly consider the desirability, the scope and the method of enquiry.

Sir Binod Chander Mitter moved an amendment to the effect that further consideration of this resolution be postponed till the opinions of Local Governments were received.

Sir Maneckji Dadabhai, in a spirited speech, opposed the adjournment as detrimental to the best interests of this country.

Mr. MacWatters accepted the amendment, and further discussion was postponed.

Economics in the West.

India and Lancashire.

London, July 14.—The references made to the competition between Lancashire and the Indian cotton mills in the debate on the India Office vote at the end of last week were wholly free from the implication of "selfishness" so often charged against Lancashire members in the past by Indian politicians.

The first allusion to the subject was made by Mr. Lansbury, who said the introduction of capitalism into India, in cotton manufactures and other industries, had created a competition with Lancashire of which it was very difficult to see the end. His implication that these competitors are nearing the parting of the ways was challenged promptly by Mr. W. Greenwood, the Unionist member for Stockport. Mr. Greenwood expressed the hope that Lancashire and India would always have the very friendliest relations with each other. Lancashire, more particularly in its cotton-spinning industry, was still going through depressing times, and many an out-of-work weaver and spinner in Lancashire was asking to-day what was the matter with the Indian trade. Lancashire was glad to know that economic conditions in India were improving and also that the cult of non-co-operation was declining. Mr. Greenwood justly said that the ardent advocates of further constitutional reform would not bring it nearer by standing in the way of poor Indian people who would have been glad to purchase Lancashire goods if they had not been prevented from doing so by the boycott movement.

A similar point of view was taken by Mr. Charles Buxton, the Labour Member for Accrington, who said it was a mistake to suppose that the interests of Lancashire and the interests of the Indian peoples were necessarily irreconcilable one with another. He did not deny that conflicts might arise, but he thought that with proper handling of the problems on both sides there ought not to be any irreconcilability. He raised the interesting point that the competition for the cotton trade provided a line of contact between the workers of this country and the workers of India, and was valuable in promoting a genuine and deep interest on this side in Indian affairs. Certainly it is the case that in no other part of the country does the general public take so much interest in Indian affairs as in Lancashire.

Purchasing Power.

Mr. Greenwood, referring to the economic improvement in India, said he was not one of those who thought that the prosperity of the Lancashire industry depended on producing goods at such a low price that they could be purchased in India, no matter how the conditions were there. Lately Lancashire goods had been produced and sold at a price below cost. He did not believe that it was essential to cut prices to such a low rate that when the purchasing power of the Indian was below normal they could purchase them. Rather, he would like to see the purchasing power of the Indian increased so that they could do more business.

It is some encouragement to Lancashire to know that mainly by her contributions the Indian import trade substantially improved in the twelve months ended on March 31. The import of grey and bleached piece goods was roundly 1,334 million yards and of coloured piece goods 244 million, as compared with 942 million and 138 million respectively in the previous twelve months. The value of these imports was nearly Rs. 61 crores as compared with Rs. 45½ crores in the previous year. The revival is continuing, and in the month of May the import of cotton piece goods was 132 million yards as compared with 74 million yards in May of last year.

In 1922–23 there was improvement, though less marked, in the importation of yarns. The weight of Nos. 1 to 25 shipped to India was nearly 14 million lbs., as compared with 81 million lbs. in the previous year. In Nos. 26 to 40 the quantity was 31,365,000 as compared with just under 31 million, while above 40's there was a drop from nearly 9 million to 6¼ million.

Indian Production.

The Indian production in the twelve months did not show any marked advance. The 706 million lbs. of yarn spun represented an increase of 1.8 per cent and the 405¼ million lbs. of woven goods manufactured was in excess of the previous year by only 0.4 per cent. The exports of Indian yarn underwent marked decline. They amounted to 57 million lbs., as compared with 81 million and 83 million lbs. in 1921–22 and 1920–21 respectively.

The production of the Indian mills in the lower counts advanced by 12½ million lbs.

In counts 26 to 40 there was slight increase, while above 40's production declined somewhat, standing at 2,195,000 lbs., or a little more than a third of the import.

It is an interesting fact that the goods woven in Indian mills were returned as of a value very similar to that of the import of cotton goods, the figure being 59⅓ crores. But in the previous year the total was Rs. 60¼ crores, as compared with only 45½ crores of imports. It is the fact of reduced prices which gives the lower figure for a somewhat larger output, as compared with the previous year. The production in grey and bleached piece goods of shirtings and long-cloth was 470½ million yards, a reduction of 0.4 per cent. In T-cloth, domestics, and sheetings it was 81 million yards, or 6.6 per cent less than in the previous year. In dhotis the output of 431 million yards represented a drop of 4.4 per cent. The 63¼ million yards of chaddars, however, represented an advance of 4.9 per cent. The output of coloured piece goods was 453½ million yards, or an increase of 0.2 per cent.

Panjab Paper Mill.

On other page of this issue we publish particulars of a new paper mill to be established in the Punjab. During the war the high price of paper in the Punjab market, which is 500 miles from the nearest paper mills in the United Provinces and over 1,000 miles from the Bengal mills, was responsible for a number of enquiries into the possibilities for manufacturing paper in the Punjab and the rest of India but we note, the idea was abandoned in the Punjab owing to lack of reliable information regarding the supply of raw materials, the want of a supply of good coal and heavy transport charges. Mr. Kashi Ram is responsible for the promotion of the Punjab Paper Mills Company to manufacture paper from Bhabbar (Baib) grasses, a material which has already been used with considerable success in the manufacture of paper in the United Provinces and in Bengal where the cost of transport for raw material is considerable in comparison to what it is the case in the Punjab. The site selected for the mill is near the headworks of the Western Jumna Canal, about 23 miles from Jagadhari railway station and is almost in the centre of the district from which the raw material will be obtained and an unfailing water supply is available. The present annual yield of the area is 12,000 to 15,000 tons of grass, sufficient to produce 5,000 to 6,000 tons of paper. Mr. Kashi Ram has secured a monopoly of the produce for a long period and the cost of the grass delivered at the mill will be about Rs. 14 per ton. A waterfall of 40 feet near the headworks of the Western Jumna Canal will be harnessed to provide electric power for the mill, an agreement having been entered into with the Punjab Government for the use of the water for this purpose. The water of the Jumna has been tested and found suitable in every respect for the manufacture of fine quality paper and labour is reported to be plentiful in the locality. The mill site is 200 miles from Lahore and 80 miles from Delhi, both large centres for the paper trade, while the annual consumption of paper in the Punjab, exclusive of Delhi, is about 12,000 tons. The Western Jumna Canal is navigable as far as Delhi and supplies for the northern districts of the Punjab will be transported by canal to Jagadhari railway station and thence railed to destination. The promoters anticipate being able to pay the handsome dividend of 40 per cent selling paper at 3½ annas per pound as compared with 5½ annas per pound for imported paper. The capital of the company is fifty lakhs of rupees and the directors include H. H. the Maharaja of Sirmoor and the Raja Sahib of Kalsia. Grass concessions from the Sirmoor and Kalsia States are to be paid for by the allotment of shares. Two things are necessary for success of ventures of this kind independently of the duty on imported paper. The first is unstinted public support. Another is Government purchase of manufactured goods. Government should see to it that they purchase only *Indian* manufactured paper. No Government contract should go to foreign firms, as the support of local products is necessary for the success of the local industry. We wish all success to the new venture and trust both the people and Government will support it.

Canadian Trade and Finance.

The Business Cycle.

Montreal, July 1st 1923.—One of the most vital economic problems which the present generation faces is that of securing more uniformity and stability in business, and thus preventing or modifying the extreme depressions and panics which are attended by so much suffering and loss. In our last issue we published a brief analysis of the business cycle, outlining the chief characteristics of each phase. We shall now endeavour to survey the progress that has already been made, drawing attention also to some of the more feasible suggestions that have been advanced, in the direction of eliminating the extremes of these movements, with the aim of mitigating at least the most serious effects. While no universal panacea has yet been discovered, much has been accomplished through the methods that have been tried or adopted, in varying degree, in different sections of the world. We shall discuss the question from the standpoint of banking control, governmental control, and individual action.

Banking Control.

It has long been realized how important it was, in time of financial crisis, that solvent borrowers should have the assurance of obtaining reasonable credit accommodation. On the basis of experience in this respect, English bankers, through the raising of discount rates have conserved credit for the use of those borrowers whose affairs were in a satisfactory condition. At the same time, the higher rates attracted money to London when it was needed. As a result of this control exerted through the manipulation of the discount rates, business became more stable and crises less severe. In the United States, the establishment of the Federal Reserve System, potentially, at least, furnished a corresponding source of control in the rediscount rates. From the experience of the bankers in both countries, it became apparent that the time for exerting pressure is the period when the industrial activity is approaching the peak of expansion. Without stopping to discuss the effectiveness of such control, we may safely assume that the raising of rates when inflation is just beginning will tend to prevent the extreme degree of expansion which would otherwise take place. This involves the assumption that the banker is in a position to recognize the point at which it is advisable to check further expansion. This assumption is, we think, not unwarranted, and particularly should this be so in Canada where a single bank's branches cover the whole country and extend to the important money markets of New York, and London. Boom conditions are always accompanied by an unusual demand for banking accommodation. The cautious and experienced banker should quite easily recognize the point at which credit should be restricted or rationed, this point being clearly indicated by a tendency to depletion of the bank's loanable funds.

The question of the elasticity of a country's currency should be mentioned here. Obviously the amount of paper money in circulation should correspond to the volume of business transacted. Otherwise, panics and depressions are accentuated by a shortage or redundancy of currency. In most countries a more or less elastic currency has been adopted but much can yet be done in this direction. It need scarcely be stated that one of the essential conditions of stable business throughout the world, is the return of the depreciated currencies either to par, or that being impossible, to some fixed quotation. It matters less, what the quotation is than that it be stable at that point. The first requisite in this direction obviously is the limitation of the issue of paper money. The stabilization of the Austrian currency has been the most important factor in the substantial recovery which that country has made during the past six months.

Governmental Control.

Another source of control over the cycle is the forceful limitation, either by co-operation or by governmental control, of the degree of expansion which takes place. This applies particularly, as yet, to public or quasi-public business. In a recent issue we drew attention to the methods used in certain countries of carrying on public works, improvements and building during periods of least business activity. The effect of such a plan is two-fold. It provides employment and facilitates business in periods of depression and, on the other hand, it prevents undue expansion while business is on the upswing. During the present period of expansion in the United States much is being accomplished in this respect. Only

recently Secretary Hoover of the Bureau of Commerce appealed to state governments and municipalities to refrain from undertaking necessary building enterprises during the present period lest such activity would unduly increase the business expansion. The suggestion was consciously or unconsciously adopted throughout the country. Due to the activity of the labour unions and also to the willingness of employers to pay unusually high wages to obtain labour, building costs continued to soar without restraint, until, only a few weeks ago, construction firms, realizing the impossibility of such a state of affairs lasting indefinitely began to cancel large contracts. The movement began in New York and has spread throughout the country. One may consider this to be an example of the application of conscious effort to control the degree of expansion, thus lessening the intensity of the depression which must necessarily follow. This was a case merely of governmental suggestion. Control, may, in time, be considered advisable.

Another phase of the question, which is undertaken both by governmental bodies and by private corporations has to do with the various types of unemployment insurance. Provision is made for the payment of premiums either by the employees, or by the firms, or jointly, according to various plans. Unemployment insurance obviously does not eliminate depressions but what it does is to keep the purchasing power of the community nearer to an even level, and also to relieve the suffering which might otherwise take place.

Another type of insurance which seems destined to play a very important role towards the stabilization of business is credit insurance, which, incidentally, is somewhat new in Canada. By means of credit insurance, a business man has a guarantee that his losses, arising out of the insolvencies of his debtors during any given year, cannot exceed the normal expectancy of such losses for his particular line of business. It is stated in a recent copy of the "Insurance and Financial Review" (Toronto) that during the past ten years the insolvency loss of wholesalers in a certain area exceeded the fire losses of all merchants, owners of timber lands, and railroads combined, by four hundred million dollars. This statement illustrates the high degree of uncertainty which is connected with the extension of credit on account of the fact that the causes of insolvency are very numerous and are usually beyond the control of the credit grantor. The ability to insure against credit loss cannot, but have a strong influence towards making business more even and stable.

Private Initiative.

It is probably in the realm of private endeavour that most has been accomplished. Certain of the larger firms, by the systematic use of the statistics, have so related their output to demand, that in their own particular line, a relatively even level of business can now be maintained. Owing to the method, necessitated by the nature of the commercial system, of producing for a future period and buying for future delivery, supply is regulated not by actual demand, but by the producers' estimate of future demand. Obviously, this estimate is not always correct and a consequent surplus or shortage results. It is these surpluses and shortages that make business unstable and uneven, and their prevention, by means of statistical accuracy, in so far as that is possible, is destined to work in the direction of stabilizing business. One of the fundamental defects in our industrial system in fact is the mal-adjustment between production and marketing, and the co-ordination of these factors is an essential step towards the stabilization of business. Production itself passes through stages of gross inefficiency during periods of prosperity. Costs per unit rise enormously at certain periods. Prominent firms are now endeavouring to measure this factor and to establish a more accurate cost index. In a recent investigation carried on by the Federal Trade Commission in the United States, it was found that out of 260,000 corporations studied, only 10 per cent knew the actual cost of manufacturing and marketing. This indicates the necessity of better cost accounting systems in manufacturing industries and fortunately much progress is being made in this direction. The banks, for example, are more and more insistent that corporations desiring credit shall present adequate statements of costs and operating efficiency before obtaining loans. The application of more efficient production methods is rapidly stabilizing output and this relates to the personnel of labour as well as the physical factors in industry. Business information, in order to become valuable, must enable business executives to anticipate the future with substantial accuracy, and the gradual abandonment of the system of estimates and the adoption of statistical accuracy represents the transition from a condition of extreme business fluctuations to one of business stability.

The discussion is not complete without mention being made of the whole question of price stabilization. One of the factors in the business swing is that manufacturers usually try to get the utmost for their product during the period of prosperity and are obliged to write down prices very materially when the depression sets in. These factors serve only to accentuate the depression. An important movement is under way at the present time to stabilize price levels, and anything that is accomplished in this direction is of infinite value in the control of the business cycle. So great is the interdependence of various branches of business and industry, that the stabilizing of certain basic lines of production has a most important influence for uniformity throughout every branch of business.

In conclusion, mention should be made of the work which is being done by certain statistical organizations in compiling and supplying to the public, valuable data with regard to the probable trend of business. The business fluctuations which have occurred since the Armistice emphasize the value of using statistical information as a guide, and there is strong evidence to support the view, which some one has expressed, that the present decade marks the transition from the old business methods of uncertainty and chance to standardized and accurate methods which are destined to go a long way in stabilizing business.

Nagpur University.

Its constitution.—In pursuance of the provisions of sub-section (3) of Section 81 of the Government of India Act the Governor-General on the 6th instant has given his assent to the Nagpur University Act.

The following shall be the authorities of the University:—(i) The Court, (ii) the Executive Council, (iii) the Academic Council, (iv) the Committee of Reference, (v) the Faculties and (vi) such other authorities as may be declared by the Statutes to be authorities of the University.

(1) The Court shall consist of the following persons, namely:—

Class I.—Ex-Officio members—(i) the Chancellor, (ii) the Vice-Chancellor, (iii) the members of the Executive Council and the Ministers of the Governor of the Central Provinces, (iv) the Judicial Commissioner, (v) the Bishop of Nagpur, (vi) the members of the Executive and Academic Councils, (vii) the Treasurer, (viii) the Principals of Colleges, (ix) the Professors and Readers of the University, and (x) such other *ex-officio* members as may be prescribed by the Statutes.

Class II.—Life members—(xi) Persons (if any) appointed by the Chancellor to be life members on the ground that they have rendered eminent service to education.

Class III.—Other members—(xii) Graduates elected by the registered graduates from among their own body, (xiii) persons nominated by associations or individuals making to the University annual contributions of an amount to be prescribed by the Statutes for a purpose approved by the Executive Council, (xiv) persons nominated by other non-academic bodies approved in this behalf by the Chancellor on the recommendations of the Court, (xv) persons other than professors and readers of the University, elected in accordance with the Statutes from among their own bodies by the teachers in the University and the colleges and (xvi) persons nominated by the Chancellor.

(2) The number of members to be elected or nominated under clauses (xii) to (xvi) of sub-section (1) the tenure of office of such members and the mode of election of members to be elected under clause (xii) and clause (xvi) of sub-section (1) shall be prescribed by the Statutes.

(1) The Court shall, on a date to be fixed by the Vice-Chancellor, meet once a year at a meeting to be called the annual meeting of the Court.

(2) The Vice-Chancellor may, whenever he thinks fit, and shall, upon a requisition in writing, signed by not less than twenty-five per cent of the members of the Court, convene a special meeting of the Court.

The Court shall be the supreme governing body of the University and shall have power to revise the Acts of the Executive and Academic Councils and shall exercise all powers and perform all duties conferred or imposed on it by or under this Act and shall exercise all the powers of the University not otherwise provided for by or under this Act.

The Executive Council shall be the executive body of the University and its constitution and the terms of office of its members shall be prescribed by the Statutes.

The Academic Council shall be the academic body of the University and its constitution and the terms of office of its members shall be prescribed by the Statutes.

Views and Comments.

BY "ECONOMICUS."

The economic condition of the rural classes in India has become the subject of keen controversy. "Without an extremely elaborate and costly survey," truly observes Mr. Rushbrook Williams in his "India in 1921–22", (pages 193-4), "no one can settle with exactness the problem, which is constantly propounded in the public press, whether the masses of India are becoming poorer or richer under British rule." But Mr. Williams is on unsafe grounds when he lets in certain "indirect evidence as to a growing prosperity rather than to an increasing poverty." Writes he :—"The remarkable popularity of railway travel, as witnessed by the phenomenal multiplication of third class passengers during the last decades would seem to indicate that more money is available over and above the bare necessaries of life than was previously the case. The recently increased absorption of rupees, which two years ago threatened the whole Currency system of India with inconvertibility, combined with the growing employment of silver for purposes of adornment by classes of the population previously, and within living memory, accustomed to brass, would seem to point in the same direction. Further, the steady substitution of a monetary for a National (?) system of economy, with its accompaniments of a preference for imported cloth, for imported mineral oil, and for imported domestic utensils would seem to show that those who advance India's claim to increasing prosperity have something more than personal prejudice upon which to base their contention." The present economic transition in India is certainly characterized by the above features, but it is very doubtful whether they indicate a growing prosperity. First, railway travel in India, especially for a third class passenger, is neither a luxury nor a comfort, but a necessity. Though exact figures are not available our own observation of the class of third class passengers in the S. I. R. confirms our impression that the majority, excluding of course pilgrims, consist of manual labourers and middle classes, who go to places far and near in search of employment that could not be procured at home. It is a moot question whether they return to their homes richer or poorer, but a large portion of their hard-earned money is now appropriated by the Railway and Shipping companies due to enhancement of rates. Secondly, the absorption of rupees may mean a rise in prices, and this, as we have noted in these columns, may prejudicially affect the interests of the majority of agricultural classes. Thirdly, the substitution of silver ornaments for brass by certain classes means, to some extent, a change of taste and a desire to invest their small savings in a metal, which has become comparatively cheaper in modern times. Moreover the investment in ornaments does not show an increase in prosperity, but only a certain morbid desire of womenfolk to appear respectable and social values in India are so inexorable that, whether parents or husbands can afford it or not, such a provision has to be made. Fourthly, the preference for imported cloth, etc., has certainly taken the bread out of many an industrial class and the disinherited has to seek employment in the already overstocked agriculture or emigrate to cities and foreign countries.

In a communication to the Government of India, the Bengal Chamber of Commerce states that they oppose the withdrawal of the one-rupee note. They advocate the extension of the use of paper currency and consider that the popularity of the one-rupee note is sufficient evidence of its value. We are sorry to remark that the European Chambers of Commerce and the Commercial classes in our cities generally have very little idea of the real needs of our village folk. The fact is the rupee-note is *not popular* among them. Since it circulates most rapidly and is put into the hands of the poorest it gets spoilt very soon and in the remote areas there are no facilities for getting it exchanged for a new one. In regions of heavy rainfall the notes get wet since the poorer classes are not in the habit of providing themselves with waterproof bags. The two most important canons of paper currency are *convenience* and *convertibility* and the rupee-note does not satisfy them.

Regarding the question of deferred rebates scandal in the coastal shipping in India, the

Managing Committee of the Punjab Chamber of Commerce passed a resolution recently opposing Mr. Seshagiri Iyer's Bill to provide for the prevention of rate wars and for resort to retaliatory or discriminating practice in the coastal traffic of India on the general principle of State non-intervention. "If it was considered necessary to support infant concerns," says the Committee, "it should be done by subsidizing them rather than by interfering with liberty of private concerns." Prejudices die hard, if ever they die, and it is now very late to harp on the virtues of the liberty of private concerns or on the advantages of competition, when we know, as a matter of fact, that they are abused by the strong. We would recommend the Punjab Chamber to peruse some modern volumes on Political Economy rather than Richards or John Stuart Mill.

When one's own immediate money-making interests are at stake it is generally wonderful—or shall we say tragic—how some good people throw to the winds of the principles of Economics of every consideration of morality and fairplay. In the course of the recent discussion on the East India Loans Bill in the House of Commons, Sir R. Hutchinson suggested that there should be a condition that at least 75 per cent of the loans raised in England for Indian Railways should be spent in the purchase of materials in that country. Earl Winterton, on behalf of the Secretary of State, said that 95 per cent of the money would be spent there. We take the liberty to ask the Finance Member of the Government of India as to what became of his faith in "the cheap market theory" expounded by him only a few months ago in the Council of State and the Legislative Assembly.

The Capital Levy.

The Republic of Czechoslovakia was the first State which attempted to place its finances on a sound basis after the chaotic conditions prevailing after the war by introducing a capital levy. The object of the capital levy was to cover the costs of introducing the new currency and the bank notes and Treasury notes taken over from the Austro-Hungarian Bank and the expenditure involved in establishing the independence of the Republic. This tax has been levied on all property (movable and immovable) situated on Czechoslovak territory on March 1st, 1919, and on all foreign securities in the possession of Czechoslovak subjects resident in Czechoslovakia on that date. It is assessed as follows: 10,000 crowns free; 1% on the first 25,000 crowns, and then on a progressive scale up to 30 % on amounts of over 10 millions.

The amount of capital levy to be paid is fixed by the Income Tax Commissioners, and is payable 15 % within 30 days after receipt of the demand for payment and the balance in six half-yearly instalments, of which the first becomes due four months after receipt of the demand.

The results of the capital levy have proved extremely disappointing and the measure itself has been a source of considerable embarrassment to the Government. The law is most complicated and is not understood by the officials responsible for its administration. It has never been carried out to the letter, except in certain particular cases. Demands for the payment of capital levy have been made to those known or believed to be in a position to pay, but the actual sum to be paid has in most cases been the subject of negotiation between the Ministry of Finance and the individual concerned, and in almost every case the final assessment has been very far below that fixed by law. This levy has had a very detrimental effect upon industry and commerce, but owing to the slow and lenient manner in which the law has been applied it has not had the disastrous results which it otherwise would have had if it had been strictly enforced.

The Salt Tax.

In reply to a question by the Hon. Mr. Phiroze Sethna in the Council of State, Government of India have made the following statement showing the revenue realized from salt during the months of March, April and May of 1922 and 1923, and incidentally showing that Government have so far derived no benefit from the enhanced duty:

	1922. Rs.	1923. Rs.
March ..	56,17,000	32,32,000
April ..	65,56,000	64,27,000
May ..	72,77,000	74,55,000
Total ..	1,94,50,000	1,71,14,000

New Europe.

By Austin Harrison.

Once upon a time—the traveller abroad falls unconsciously into the legendary manner—a man could go across Europe, knowing no languages, and enjoy himself; but to-day, the Continent is a military zone of frontiers policemen and entanglements, and travelling is a rude pursuit. Right away you learn two things: (1) No one wants you; (2) all money, save the magic dollar and the sovereign, is paper, implying and involving one stupendous and progressive swindle of all previously known values.

In the train from the Hook to Berlin, you become a practical political economist. The same dinner, cooked by the same man, and served by the same attendants in the same train, costs 1s. 10d. in Germany, 8s. 6d. in Holland; a Dutch cigar costs you 8d.; the moment you cross that awful frontier spot called Bentheim, a better German cigar costs 2d.—you are a rich man.

Such is the tourists' compensation. He is opulent. He can buy anything. He is a heavy swell. The frontier scenes are almost indescribable. There are hardly any porters. You fight your way into the Customs places; you are inspected, in some places even physically examined; officials are severely rude; the police are offensive; at last you get back to your seat—to find some extraordinary folk in possession, "profiteers," Europe's new feudal lords; and often the only way to get a seat is to turn somebody else out. The days of the "sentimental journey" are gone.

However, you arrive, sometimes six hours late, and once more you study political economy. In the paper countries things click; in the gold countries people are poor. You no longer see frayed suits, down-at-heel boots, pinched faces, anxious eyes. Every one is well-dressed. The restaurants hum. The shops are full of things. Before twenty-four hours have passed you understand the quantity theory of money. Where money circulates there money is. In the gold countries, where credit is good, money is scarce; hence high prices, poor people, bloated bankers, doles, and loss of trade.

Consequently, the Dutch, the Swiss, the Swedes, the Czechs, and ourselves are anxious people. Our credit flies sky-high, but internally we are poor because externally we cannot sell, whereas under paper precisely contrary conditions prevail. The paper peoples cannot buy. Their industries buzz, because, money being worthless, no one saves; every one buys a sixth pair of boots, another dozen shirts; a seventeenth car, or another fifty pairs of wood-silk stockings. Yet all that glitters is not gold. Despite the buzz and the surface luxury, abject poverty reigns. There is no capital, and the less capital there is the more things look prosperous.

In paper-land, now 60 per cent of Europe, money wealth has vanished. All first-class securities are non-existent; the capitalists class has gone; only workers and producer plus speculators have status. The old aristocracy and the rentier class have been blotted out. Germany is, financially, completely Bolshefied.

A new aristocracy has arisen—the Jews; they occupy all the big hotels in Europe. They are in possession. In Vienna, in Poland, in Germany, in Hungary, the young Jew speculator is the new "Furstlichkeit"; he is smart, intelligent and energetic, and he sits in the royal boxes at the operas. Money, of course, is the sole European topic, the unreality of which is the only real thing. No one discusses Reparations or even politics. Speculation is now every man's trade. Even the lift-boy sells dollars. At first foreigners speculated in marks; to-day the paper nations speculate in gold currencies. The dollar is king. You hear that word at the time, everywhere; you hear little else. On the fourth day you speculate yourself. You join the "Black Bourse" brigade.

But delving deeper, you find that Germany is run by capital held outside in foreign currencies—probably £200,000,000. The goodwill of German banks is estimated at £150,000,000. Germany is a great potential; financially worth about £500,000,000 all told; a land of dazzling tinsel underneath which professors live on £10 a month and former countesses keep grocery shops and the middle-class literally is on the streets. On paper or forged money, life is a sort of a life; that is all one can say. As for the future, or the great end of the madness, I found no one professor, banker, or economist, who even attempted a prophecy. Perhaps the most singular fact is this. No man complains of the gigantic robbery that has impoverished tens of thousands. Men who have lost £15,000

a year do not blame the Government. All maintain that it was inevitable. If Karl Marx had lived to witness this expropriation of the "expropriators" he would assuredly have re-written his book.

And with easy paper, so with morals, faiths, traditions and authority. Paper Europe lives to spend. No one believes in anything any more. Art is shock, sensation or naked women. Goethe's Gretchen is in fairyland. An ex-soldier sits good-naturedly in the Republican saddle, and manners are Republican, the rest is Saturnalia. "After us—anything," that is the "spirit" as the modern school-girl puts it. You can still extract a smile even from a policeman in modern Europe by mentioning President Wilson. Wine, women and song on paper money is pretty pleasant: that is the curious result of Balkanised Europe as it whirls and dances down the slope.

The wise tourists adopt four rules. He never changes more than £1 at a time. He travels by aeroplane. He avoids the gold countries. He lets out that he is an Englishman. Our star shines white to-day across the battle-ground of the new map, and with a Bradbury in his pocket the Englishman abroad takes his profit with the goodwill of all men. Of no other nationality can that be said: the thought consoles and supports you as, landing again in England, you realize that you are a poor man on gold: for you could have flown at 140 miles an hour from Danzig to Warsaw for the price of a third-class ticket from the coast to London, plus the cab and the tips.

A Glass Institute.

We note from the Berlin "Commercial News" that a glass institute has been established at Prague by the Czecho-Slovakian republic. Everything that is necessary to improve the glass industry and trade of the land is to be promoted by this institution. Research work as well as education in technique also fall within its scope.

Colleges of Commerce in Germany.

There are six colleges (*Hochschule* which does not mean a "high school" but is as high as a university) of commerce (*Handelshochschule*) in Germany. Of these two belong to Prussia,—the ones at Berlin and Konigsberg. Bavaria has two, one at Munich and the other at Nurenberg. Saxony possesses one college—the first of its kind—at Leipzig. The college of the Baden State is situated in Mannheim.

Industries in German Technical Universities.

The ten technological institutes (*Technische Hochschule*) in Germany are independent of the universities as well as of the colleges of commerce. Among the institutes in Prussia, iron industry has a special place at Charlottenburg (Berlin) and caustic potash, soda, rubber, etc. at Hanover.

Paper, leather, pharmacy, etc. constitute the speciality of Darmstadt in Hessen. At Karlsruhe in Baden dyeing is a chief industry. The institution at Braunschweig is visited principally for sugar. Dresdon is strong ni mechanical and chemical engineering.

It must be noted, however, that each of these institutions as well as those at Aachen, Breslau, Munich and Stuttgart is more or less all-round in its curriculum.

Educational Expenses in Germany.

Foreign students in Germany's Technological Institutes have to pay about £26 a year. This sum includes admission (£12), tuition fees (£2) and laboratory expenses (£12). At Berlin living expenses for foreigners come up to about £6 per month. Indian students should be prepared altogether for £100 a year. German money must not be bought in India.

Admission Requirements.

Nobody can be registered at any *Technische Hochschule, Handelshochschule* or University unless one passes an examination in German language. To prepare for this test Indian students generally take four or five months on arrival in Germany.

The Terms.

The winter *Semester* (term) begins about October 15 and the summer *Semester* about April 15. To be on time students should leave India at least six months before these dates.

It would appear that the possibility of manufacturing Portland cement in the United Provinces, which has been attracting the attention of engineers ever since 1873, is again being seriously considered, says the "Pioneer."

Notes from America.

The American Automobile Abroad.

The number of passenger automobiles exported from the United States in the last decade was 562,000, and of commercial automobiles, including motor trucks and busses, 135,000, figures compiled for the Trade Record of the National City Bank of New York show. The value of the passenger machines exported in the last decade is $534,000,000, and of commercial machines $288,000,000. If the record is traced back to a dozen years and made to include motor cycles, which are in fact "automobiles", the total number of machines exported including those sent to the American colonies would reach a million, and the value a round billion dollars. Even this total of approximately a billion dollars of automobiles of all types exported in the last dozen years does not fully tell the story, for the value of "parts of" machines exported for repair purposes aggregates in that period about $350,000,000; the value of automobile tires exported in that period was $180,000,000, and the engines about $30,000,000.

A much larger proportion of the machine exported is still doing business in some form than is generally realized, for many of the machines originally sold for passenger purposes are after they have rendered service in the capacity originally intended transformed into a condition in which they can be used for the minor trade traffic and industry purposes, rendering service to enormous numbers of persons engaged in business and mechanical industries, and thus minimizing the time lost by the former traffic methods and to that extent increasing their business facilities. Automobile authorities estimate that more than three-fourths of the motor cars manufactured are used more or less for business purposes.

One interesting feature of this compilation prepared for the Trade Record lies in the opportunity, which it offers to compare export prices at the present time with those of a decade ago. The number of passenger machines exported in 1913 was 25,880 and the value $25,347,644, an average of practically $1,000 per machine, while the number of passenger machines exported in 1922 was 66,790 and their recorded value on exportation $51,050,000, an average of $764 per machine, while the commercial machines show a corresponding decrease in average value.

These figures showing the enormous exportation of motor vehicles are especially interesting at this moment when the latest trade figures show tremendous increases over the corresponding period of last year. Of passenger machines alone, the total exports in the nine months ending with March, 1923, are, according to official reports of the Government, 62,454 against 23,694 in the same period of last year, and of motor trucks and busses 11,336 against 4,226 in the same months of 1921.

One especially interesting feature of the big increase in exports during the current fiscal year occurs in the fact that the large increases are chiefly in movements to European countries and their colonies. Of passenger machines the number sent to the United Kingdom in the nine months ending with March, 1923, is, 4,739 against 979 in the same months of the preceding year; Belgium 4,300 against 987; Denmark 901 against 133; Norway 1,134 against 85; Sweden 1,844 against 475; Spain 2,337 against 226; Australia 10,567 against 3,849, while to the South American countries there are also large increases, to Argentina 2,778 against 486, and to Brazil 1,959 in the nine months ending with March, 1923, against 236 in the same period of the preceding year.

"Bucket Shops" and Their Cost.

In one week of June, 1923, 1,700 victims of brokerage swindles in the United States lost their savings, in many cases those of a life-time. The black week in the annals of curb brokerage houses is only a little more sensationally disastrous than many others. Stock swindling operations since the war have cost the American public the staggering sum of $3,000,000,000. But, when the third crash within one week occurred, the District Attorney and the New York State Attorney General declared war on the "bucket shops" as the resorts for gambling on current stock prices are called.

The extent to which bucket shops have permeated the land were then revealed, and the whole situation was found to be closely bound up with conditions prevailing in the Stock Exchange situation.

There is no public inspection or supervision of the books of stock brokerage firms in the United States, and all attempts to give some regulative power to the State have failed largely, it is asserted by the "Wall Street

Journal", because Tammany politicians (the Democratic Political machine which flourishes in New York) "have always added to their other sources, the profits to be derived from protecting the bucket shops. The era of protected bucket shops almost exactly coincides with the Tammany administration of New York City. Is it any wonder that officials elected to enforce the law attack, not the lawbreakers, but the Stock Exchange, the only power which has stood between the swindled public and the bucket shop.....?

"If the Counsels of the Stock Exchange had been followed the issue of new securities would have been properly regulated, as it is in England. If it were allowed to use its proper discretion in the circulation of the prices it collects by its own agency there would be no bucket shops. But, that it is not what Tammany politicians want.

"When it is remembered that the Stock Exchange has been for the past thirty years compelled to supply the quotations, it collects, to people who were certain to misuse them, it will be seen that politicians have purposely avoided the one certain way of putting bucket shops out of business.

"Wherever the Stock Exchange has had control of its price service and the honest co-operation of the police and the District Attorney's office, bucket shops have gone out of business. They are only in business now by the grace of Tramway Hall and the city administration."

One of the factors in the situation is the consolidated Stock Exchange, which in spite of opposition on the part of the New York Stock Exchange, continues to exist, on what the "New York World" calls "a false cry of monopoly raised against the big Exchange". The Consolidated Exchange, according to the World, "serves no economic function, merely parrotting prices made on the big Exchange, the only difference being that it allows members to deal in small lots on the floor,—which is no difference at all since small lots can also be bought in the New York Stock Exchange. But it is against the consolidated Exchange that most of the prosecutions for bucketting have been directed. It constitutes, apparently, a very real obstacle to the regulation of Stock Exchange transactions in general, and should, the "New York World" believes, be abolished.

The "New York Post" agrees with its colleague that "one of the unfortunate aspects of the situation is the fact that recent failures among Consolidated houses have tended to obscure the constructive work which the New York Stock Exchange has been doing to protect investors. The general public is apt to confuse the one Exchange with the other and to consider that all brokerage failures reflect on the big Exchange. As a matter of fact, the Stock Exchange has been the one factor, which has worked steadily and strongly to drive bucket shops out of business and to protect the small investor.

"The New York Stock Exchange has gone to great effort to see that its members have no connection with questionable non-member houses, and that its stock quotation service is not available to such questionable houses. But it must furnish its quotations to the Consolidated. The Consolidated Exchange, therefore, should either put its house in order and keep it in order or go out of business."

Whether the small investor can gain any measure of protection against the organized swindling maintained by corrupt interests seems extremely doubtful, and the only means of avoiding the losses suffered through the bankruptcy of irresponsible stock trading companies lies apparently in teaching the too gullible and too optimistic American public to distrust all agents of "get-rich-quick" schemes. To this end a great number of American magazines and newspapers are running articles exposing bucket shop methods to their readers and urging greater caution in the placing of their investments.

President Harding and World Court.

Two conditions may be considered indispensable for American participation in the World Court, declared President Harding in a speech delivered at St. Louis, at the outset of his tour to Alaska, advocating American participation in the League's Permanent Court of International Justice now functioning at the Hague.

The first of these conditions is that "the tribunal be so constituted as to appear and to be, in theory and practice, in form and in substance, beyond the shadow of doubt, a world court and not a League court."

The second is that "the United States shall occupy a plane of perfect equality with every other power."

The President praised the Court as at present constituted, and assured his hearers that he neither advanced nor retreated from the position which he assumed in his message to the United States Senate just before Congress adjourned, when he advocated American participation in the Court. Further than to

mplify the suggestion then made, and brought efore the country for consideration and judg- ient, he will not go, President Harding de- lared.

"I shall not attempt to coerce the Senate f the United States. I shall make no demand pon the people. I shall not try to impose y will upon anybody. I shall embark upon o crusade."

American Steel Industry needs Twelve-hour Day.

The steel industry must continue to run on ie twelve-hour day basis in the United States. his is the substance of Elbert Gary's report o the American Iron and Steel Institute, a eport which is at some pains to show, that the welve-hour day is not injurious to workers, iat the men prefer it because of additional ay, that eight-hour shifts would increase the ost of production fifteen per cent, and would ecessitate the employment of 60,000 more orkers, at a time when there is a shortage f labour.

The report even though described as "ten- ative", and even though it throws on the overnment the blame for the labour shortage, hich is represented as being one of the obsta- es to the adoption of the eight-hour shift, as roused a storm of protest, and is generally ondemned by the press, organized labour, ocial service experts, and the churches.

The most vigorous denunciations of the ary report are those of the former Secretary f the Commission of Inquiry, Interchurch Vorld Movement, and of Samuel Gompers or whom the publication of the report was as a arion call—to make another proclamation.

"Why should the steel trust give up the welve-hour day?"-asks the Interchurch re- resentative. "Mr. Gary's statement refusing o abolish the twelve-hour day in the steel- ills is quite what was expected. There's oney in it, the mills are running full, with rders six months ahead; the churches have uit agitating; Congress is not in session; resident Harding, who asked that the evil e abolished, is going to Alaska, and steel- ill labour remains disorganized, deflated, nd leaderless.

"In May, 1921, the President and the steel- wners at the White House, where they pro- ised him a committee to consider the "prac- cability" of eliminating the twelve-hour ay. Now, when the goose hangs high, the rce ends; the "committee reports adversely", nd the industry, which in Britain, France, ermany and every other civilized country runs on the three-shift eight-hour day, cannot run so in America", and Mr. Gompers is quoted as follows in the "Globe":—

"According to the report submitted by Gary to the American Iron and Steel Institute, he bases his refusal to abolish the twelve- hour day on three propositions, as follows:—

"1. That, the agitation for reduced hours does not come from the workers themselves.

"2. That, it would increase prices fifteen per cent.

"3. That, there is not sufficient labour to supply three shifts.

"As for the first proposition, it has not been so long ago that nearly 300,000 employees in the steel industry ceased work to secure better conditions, and their main contention was for the eight-hour day.

"According to the second proposition, the economic conditions of the employees in the steel industry must be sacrificed in the interest of prices and profits. Not a thought of the souls of men, only the profits that can be wrung out of the over-worked and under-paid employees.

"As to the third, that is a platitude that should shame even its authors. If the United States Steel Corporation and the other steel industries would pay sufficient wages they could secure all the workers they needed."

What the report makes clear, says "The Survey" (New York), "is that the burden of bringing the steel industry in line with standards of world-wide acceptation and up to the level of European nations rests solely upon the public and upon labour. The public can perform its duty only through the medium of law; labour only through another strike." The Allentown "Pennsylvania Labour Herald" cites a report of the Children's Bureau of the Department of Labour, which shows a much higher infant mortality rate among the child- ren of steel-workers in Gary, Indiana, than for the general registration area. And "Labour" (Washington), official organ of the sixteen railroad labour organizations, interprets the report as "making it evident that Gary's plea is an augment for breaking down the restrictive immigration laws so the steel industry may have hordes of cheap alien labourers at its gates bidding against each other for a job."

American System of Immigrant Selection

"Not at the day of Judgment will there be more terrible partings than take place at the United States Immigration Depot at Ellis Island," said the United States Senator Royal

Copeland, in the course of an address to the graduating class of Syracuse University. "Instead of being scientific, our present system is absurd and contemptible. Not only so, but it is cruel and heartless. Those poor immigrants who come to us sell all that they have and set forth for the land of their dreams. To them America is like heaven. Perhaps, they have selected the fastest ship or the one with the willest captain—in any event they reach Ellis Island. For no reason or another a family is divided....."

The percentage system as applied to immigration is entirely unsatisfactory as now practised in that it allows the steamship companies to say who is to become American citizens, Senator Copeland continued. He advocates sending American officials abroad to examine prospective immigrants at the ports from which they wish to sail. Immigrants with agricultural training should be sent to the southern ports of the United States instead of to New York which receives eighty-seven per cent of the total number of immigrants entering the United States.

The United States Government should study the needs of the county, and send well-informed officials abroad to encourage desirable immigration, but meanwhile power should be given the President to make exceptions in the application of the stringent immigration law, to prevent "the terrible things which take place at Ellis Island", urges the Senator.

SECRECY FOR THE PHANTOM WIRE.

One of the chief problems of radio telephony has been removed by the perfection of a device for insuring privacy of conversation, the American Telephone and Telegraph Company has recently announced.

The new invention distorts or "scrambles" the conversation passing along the "phantom wire" of the radio, and no receiving set which is not specially designed or manipulated to "unscramble" the words, can obtain anything intelligible from them.

It is not claimed that the new system is absolutely secret, but it does insure the privacy which was lacking when the words transmitted could be picked up by any amature receiving station in the region.

Indian Tariff Changes.

In addition to the proposal to double the salt duty (which has been rejected by the Legislative Assembly, but which has been certified by the Viceroy) and to reduce export duty on hides and skins to 5 per cent (dropping the Empire preference), the Indian budget makes the following important changes in the tariff schedule.—

(a) Saccharine (except in tablets) Rs. 20 per lb. (b) Scacharine tablets 25 per cent *ad valorem* or Rs. 20 per lb., whichever is higher. (c) The definitions of machinery and component parts thereof have been revised. (d) The definition of "iron and steel" is revised so as to include roofing and metal at 10 per cent, but excluding builders' hardware at 15 per cent. (e) The defininition of railway materials (10 per cent) has been revised so as to exclude engines and tenders, which are included in the definition of machinery ($2\frac{1}{2}$ per cent). (f) The definition of carriages, and carts and other conveyances has been revised. (g) A new item has been introduced, "Electrical control gear and transmission gear," which is subject to 15 per cent. (h) The duty on tea chests and tea lead is raised from $2\frac{1}{2}$ per cent to 15 per cent.

Milk Product Industry for Hungary.

A large modern butter and cheese factory is about to be founded at Kaposvar, Hungary. Up to the present the country has boasted no more than one such concern manufacturing these articles on a wholesale line. The new factory will not only produce for the home market, but also for export, and will be capable of turning a million litres of milk into 400 metric centals of butter daily. The buildings are to be equipped with the most modern machinery and work is to be conducted on Danish lines. This new concern is being financed by the Hungarian General Credit Bank, and doubt is being expressed as to whether the bank will ever be in a position to purchase sufficient quantities of milk to make the venture a successful one, in view of the fact that practically the whole of the country's milk production is at present in the hands of a rival bank, which appears to be on an extremely good footing with the Union of Agriculturists. It is decidedly not in the interests of a country that such articles as milk and butter should be virtually a monopoly of any one concern, able to regulate prices at will, and it is for this reason not to be regretted that a little healthy competition is about to enter the field.

Agricultural Credit.

Agriculture is India's most ancient and primary industry, yet it remains, says Sardar Jogendra Singh in the "Times of India", the Cinderalla of our politics. People talk a good deal about its importance and make political capital to support forlorn causes. The Government officials and the popular leaders are full of sympathy for it, but when it comes to doing things they agree to increase the burdens on land. Hardly any one in the Government of India, or amongst the popular leaders, depends directly on agriculture, and that is perhaps the reason why land problems have never received the serious attention they deserve. Now to crown everything unrest is considered to be the right remedy in some quarters and some people are busy in trying to infuse a spirit of discontent in the villages. Labour in Europe may legitimately desire the restoration of a right relationship between all those who co-operate in production and refuse to be exploited; but even there it is not a sign of health. Neither the labourer nor the capitalist realizes that the worker is mainly exploited by the poverty of the countries which the capitalists endeavour to monopolize and exploit for their country and for themselves. In any case unrest amongst the villages in India, unless directed to increased production, is likely to destroy the village policy which has endured through the ages.

In dealing with the agricultural problems there are three points of paramount importance:—

(i) The uneconomic nature of the holdings which in some districts are less than an acre in area and altogether inadequate to support a family.

(ii) Absence of credit facilities.

(iii) Incidence of land tax.

There is no agency in the whole machinery of the Empire at present devoting much attention to these.

I will not at present deal with the question of the consolidation of holdings and bringing waste lands under cultivation, nor with the land tax and the need of determining a surplus on which land tax should be assessed, but will mainly confine myself to the immediate need of creating credit facilities for the agriculturist. I am aware of the excellent work done by co-operative societies, but I am also aware that the resources of the societies are entirely inadequate to meet the demand. They don't attract large deposits and consequently are limited in their operations. Indeed without large banking facilities organized on an adequate scale there can be no improvement in our agriculture.

Agriculture and the Imperial Bank.

The Imperial Bank, as a Central Bank, can do a great deal in organizing capital and affording credit facilities, but here again, it has no direct representative of the agriculturists on its governing body. The Bank, however, is opening branches everywhere and it will soon come in touch with rural conditions and realize the needs of the bulk of our population who have to pay 100 per cent and over in interest to raise any money. In some localities the villages are so heavily involved that systematic liquidation under official liquidators is the only way to solvency. In others Government has been compelled to enact laws to prevent alienation of land, which of course, while protecting the land, undermines the credit of the owners. The peasant cannot change his profession. There is nothing else for him to do. He must go on performing it whether he likes it or not, whether it pays him or not, for reasons which are obvious. For centuries the peasant has been no better than a serf. He has just managed to exist taking the good with the bad years which come with distressing frequency when he cannot even manage to stave off starvation.

The agriculturist needs credit as do others, but his equipment as a borrower is not acceptable to Banks; his remoteness from central places; his inarticulateness; the uncertainty of his crops; and the length of time for which he may require accommodation bar the way. Even loans of a larger nature required for the development of land are practically unobtainable. The Bania lends money at rates which bar repayment; the result is the lowering of national vitality, a diminishing of powers to draw on the trasures of nature. If India is to prosper it is imperative that credit should be available for the peasant. India can only prosper if agriculture prospers.

Land Banks.

The question of agricultural credit has received very close attention in some European countries, notably in Denmark and Germany where the Governments have cordially co-operated in creating credits. People in India now regard the Imperial Bank as a semi-public institution and except the Bank to take a national, almost an altruistic, view of our

vital financial problems. The need of the moment therefore is, that the Imperial Bank should set up a supplementary system of banking and turn its district banks into "Land Banks" on the same lines as in Germany, or the proposals mooted in England. It will not be a financial adventure, but sound business. The Government lends sometimes, but its methods are in-elastic and end in red tape strangulation or in sudden reversals of policy. The only possible way therefore is that the Imperial Bank should have a "Land Branch" of its business in the full sense of the word in which the Government shall participate. The necessary capital could be raised by an issue of Government guarantee land bonds to an extent and on terms justified by the security held from time to time. Most of the district branches of the Imperial Bank can do the land banking, receiving deposits and granting loans. The money lodged in the Post Office Savings Bank, as suggested by the English Committee, can be used for the development of the district where it is collected. The creation of the land bonds will offer to the investors a very safe and attractive security and afford to the Bank a tremendous outlet for the use of its funds. The public will have a double guarantee of the Bank and the Government will be fully satisfied. It will combine official inspection with commercial supervision and enable large sums of money to be available without sacrificing liquidity or depleting the Government Exchequer.

I hold that in the interest of India and the Empire the industrial development of the country is a paramount necessity, but, I hold also that we must begin with agriculture and build round it manufacturing branches dealing with the produce of land, bringing within the range of the village weaver, the oil presser and the other craftsmen the power looms, the modern oil press and other modern machinery. Every district should have its central supplying agency creating electric power from our great rivers and canals and serving the villages in their homes. They should also have managing agencies for supplying designs, arranging material and undertaking marketing.

I am convinced that one of the first steps to realize this dream is the establishment of a sound comprehensive and an elastic scheme of agricultural credit which the Government and the Imperial Bank should create.

"Maternity and Child Welfare".

There are undoubtedly many persons in this country keenly interested in the subject with which the above *Journal* deals, and the low price at which it can now be obtained (eight annas per copy) should bring in within reach of all. The present number is almost exclusively devoted to the welfare of women-workers and their children. Factory managers and coal-mine owners will find in it many useful suggestions, but it should also prove valuable to those who are interested in the general subject of women's work and its effect on their children. Dr. Tomb, the Chief Sanitary Officer of the Asansol Mines Board of Health and Dr. Dagmar Curjel of the Women's Medical Service, have each contributed very interesting accounts of the conditions that obtain in the chief mining districts of Bengal and Bihar. There is also an illuminating article by Dr. Barnes, W. M. S., relating to women's employment in the Bombay mills. Dr. Mehta, who has had considerable experience as Medical Officer of the Sholapur Spinning and Weaving Mills, gives a clear outline of how physical well-being of children in a factory may best be safeguarded. Finally, a paper by Dr. Annie Besant deals with the general aspects of the question in a paper entitled "Women as Mother". The *Journal* is intended to bring to the notice of the general public in India, the causes of the high rate of infant mortality in this country and to suggest remedies. Legislators and others who are anxious to lessen this appalling loss of life cannot do better than to purchase this Journal regularly. Those who are actually engaged in carrying out remedial measures are invited by the Editor to send articles giving the results of their experience. The Journal will in this way not only become a link between the different welfare agencies in India, but will also help to disseminate information relating to the prevention of infantile mortality and will thus save the country from being robbed of many potential citizens.

The juice of peepal (*ficus religiosa*) trees contains lac and is useful in preparing waterproof cloth. The gas-holders of ancient Indian balloons were made of silk cloth and were made gas-tight by coats of the extracts of these trees.

Books in Brief.

Economic Phenomena before and after the War.

By Slavko Seceerov, Ph.D., M.Sc. (Econ.), (London), F.S.S., published by Messrs. George Routledge & Sons, Ltd., London and Messrs. E. P. Dutton & Co., New York.

We owe an apology to Messrs. Routledge and Sons for the delay that has occurred in reviewing this suggestive work of Dr. Seccerov. The book is dedicated to the "Serbian Nation", and is included in the series of Monographs by writers connected with the London School of Economics and Political Science. Dr. Seccerov attempts in it the results of his search for a scientific, synthetic explanation of modern wars, by means of economic statistical data, as far as they exist in the statistics of consumption, production, and natural growth of population in the several countries investigated. His views can be stated thus in his own words :—

"It is partly an ordered and critical assemblage and exposition of existing data with regard to this synthetic explanation of modern wars, and partly a record of original research of economic phenomena and their measurement by means of statistical methods.

The author attempted to measure the growth of consumption in the chief countries by means of index numbers with a similar base, so as to render a comparison possible. Further, the author endeavoured to measure the growth of production of primary and secondary goods by production index numbers, computed with a similar base for like commodities for the whole world, for longer and shorter periods.

The theory the author propounds, assumes that a state of war in the modern communities is dependent on the general economic equilibrium, which becomes more and more unstable as industrialization progresses. The Economic Equilibrium of the modern communities is a resultant of the growth of population and consumption and of the state of production and distribution. In order that the economic equilibrium of modern communities should be stable, there has to be a certain proportion in the growth of population and consumption and the state of production and distribution. The forces affecting the growth of population, consumption, and production, and the state of distribution have to run in parallel direction, if the proportion and economic equilibrium be stable.

The pre-war unstable state of economic equilibrium is indicated by a situation where the actions of the forces become more and more of antagonistic nature. The natural growth of population is in a declining phase, while the consumption per head is in an ascending phase. Yet although the short pre-war period of consumption is in ascending phase, the average of this period is lower than that of the preceding equal period ; that is termed the pressure on consumption.

The state of pre-war production is characterized by a disproportionate rate of increase in the production of primary and secondary goods, the former including the necessaries of life and raw materials connected with them, the latter the industrial and commercial products of modern communities. The rate of increase in the production of secondary goods is twice as great as that of the production of primary ones.

A state of war indicates a turning point in the action of balancing forces ; it moves the economic forces in an opposite direction, and therefore it is a means to stabilize the general economic equilibrium.

After war, the rate of natural growth is in an ascending phase and the consumption is in a declining one ; the production of secondary goods is either supplemented by areas of production of primary ones, under very different political formulas, by the countries winning the war, or the production is directed to an intensive cultivation of primary goods in the countries losing it.

The state of distribution, although of fundamental importance, is not yet investigated ; yet it is the author's idea, that the ultimate cause of modern wars is dependent on the action of distributive forces, effecting a continuous accumulation of capital, and therefore creating a demand for investment and employment, and that is done in industrial processes ; thereby the disproportion in the production of primary and secondary goods is continously pushed forward. Yet the function of war in regard to this accumulated capital is

partly to destroy it and partly to bind it in the shape of Government debts and therefore depressing its action. These, although obvious phenomena, have not been statistically investigated here."

The book is suggestive to a degree and, despite its nature, is thoroughly readable. We have no doubt that it will help others to go into the allied topics alluded to by Dr. Seccerov in it.

The Destructive Distillation of Wood.

By H. M. Bunbury, M.Sc. (Bris.), B.Sc., (London), Research Chemist to the British Dye-Stuffs Corporation, published by Messrs. Benn Brothers, Limited, 8, Bonverie Street, London, E.C. 4. Price 35s. net.

The importance of the subject of destructive distillation of wood is so well recognized now-a-days that it requires very few words on our part in commending Mr. Bunbury's book on it. Mr. Bunbury may justly claim that his is the first "English book dealing exclusively with wood distillation", that has so far appeared. The treatise is a complete one. It deals generally with the subject of destructive distillation, lifting the veil that shrouded the subject until recently. Besides this, the book gives a full description of the plant, processes and methods adopted in modern wood distillation from tree. A good account is also given of the physical and chemical properties of wood, including the latest researches on the wood substance and the views of its constitution to which these have led. Chemists and technologists ought to find this part particularly valuable, quite apart from those engaged in the wood distillation industry. Another allied matter to which Mr. Bunbury addresses himself in this book is the problem of utilization of waste products. On this subject, this book ought to prove a welcome contribution in the industrial fuel problem. There is only one thing lacking in the book to make it a complete hand-book on the subject. And that is, the subject of secondary products derived directly or indirectly from the primary products of wood distillation. Mr. Bunbury disarms criticism when he suggests that space considerations have left him no alternative in the matter. We trust he will allot some pages to this all-important subject, when a new edition of the book is called for. The book is fully illustrated and is replete with tables. Wood distillation has caught on this country—at any rate in the Mysore State—and Mr. Bunbury's excellent book ought to go a long way to make work in connection both easy and profitable.

Cheques: Their Origin and Development.

By C. F. Hannsford, Examiner in Banking and Currency, to the London Chamber of Commerce, published by Sir Isaac Pitman and Sons, Limited, price 6 s. net.

This is an excellent and welcome addition to the well-known "Bankers' Library", edited by Sir John Paget, Bart., K.C., issued by Sir Isaac Pitman and Sons, Ltd. Interest in Banking is so general now-a-days in this country —which is natural seeing the growth of Banking here on Western lines—that a book like this fills a desideratum. Mr. Hannsford has produced a book which is both historical and descriptive. It is a thoroughly up-to-date book, the legal side receiving adequate attention. Every "Banker" in this country should possess a copy of this book, which is both cheap and handy. Foreign cheque transactions are dealt with in this book in a chapter by itself. This, we think, is an advantage. We heartily commend the publication to all concerned with Banking in India.

Essays in Liberalism.

Lectures and papers delivered at the Liberal Summer School, at Oxford, 1922. Messrs. W. Collins Sons & Co., Ltd., 44, Pall Mall, London.

Among the contributors to this suggestive collection of Essays are Lord Robert Cecil, Major-General Sir Frederick Maurice, J. M. Keynes, Sir Hamilton Grant, the Rt. Hon'ble F.D. Auckland, J. A. Spender, the Right Hon. J. M. Robertson, Professor L. T. Hobhouse and others. We would cordially commend this book to all interested in British Liberalism to-day. Sir Hamilton Grant's paper on India is an eminently judicial one. In summing up the Montague-Chelmsford Scheme of Reforms, he says that though it is a capable and conscious endeavour to give gradual effect to a wise and generous policy; it has "of necessity its weak points". The system of diarchy is, he says plainly, "a stop-gap, which is already moribund". As regards time-limits for grant of further Reforms, his words are worth quoting. "The attempt to fix definite periods", he says, "at which further advances towards self-government can be considered is bound to fail. You cannot give political concessions by a stop-watch; the advance will either be much more rapid or much slower than the

scheme anticipates". A few of his final words should also be quoted. "Let us regive and regain, above all things, goodwill." "Let us not resent the loss of past privilege, the changes in our individual status, and let us face the position in a practical and good-humoured spirit." "Let us abandon all talk of holding India by the sword, as we won it by the sword—because both positions are fundamentally false." "Let us realize that we have held India by integrity, justice, disinterested efficiency—and above all, by goodwill—and let us continue to co-operate with India, in India, for India on these lines." An admirable collection of essays is worthy of close attention in this country, for, it contains the best thought of England on World problems of current day interest. It is a marvel of cheapness for its contents—2s. 6d. for a book of 250 pp., clear print and good paper.

League of Nations Second Year Handbook, 1921–22.

By C. H. Severmore, Ph.D., published by Messrs. P. S. King and Son, Ltd., Orchard House, London, price 7s. 6d.

This is an excellent handbook of the work done by the League of Nations. Its editor, Dr. C. H. Severmore deserves praise for the comprehensive publication he has issued. In its general plan, this edition follows the first year's "Handbook". The book is a complete story of the Washington Conference and contains full texts of all treaties and engagements. Dr. Severmore is Secretary of the League of Nations Union and of the New York Peace Society and as such he is peculiarly well qualified in undertaking a publication of this kind. The book has no list of contents, but has a fairly good Index. We trust that a list of contents will be supplied when the third year's "Handbook" is issued.

Karachi Handbook and Directory, 1923–24.

Price Rs. 5 net. (With large scale Map of Karachi Rs. 5—8—0). "Daily Gazette Press," Kutcherry Road, Karachi.

This is a thoroughly comprehensive handbook and Directory for Karachi. It has been edited by Sir Montagu, De P. Webb, Kt. C.I.E., C.B.E., M.L.A., perhaps the most versatile man of business known to Karachi. The previous edition (for 1922-23) proved a great success and its very success has encouraged the publishers to issue the present edition. Much new and valuable information has been embodied in this edition and all information has been carefully lifted and brought up-to-date. The handbook includes a readable description of Karachi and its history. The Directory part includes besides other useful information, lists of residents and seven appendices containing supplementary information, about Treaty with Traq, Karachi Tonnage Scale, Karachi Municipal taxes, etc., etc. The Editor's "Foreword" is devoted to the Sukkur Barrage Scheme and is vivaciously written.

Work of the Indian Legislatures.

Compiled under the order of the National Conference, published by the General Secretary, Headquarters of the National Conference, Post Box No. 904, Madras S. Printed at the Besant Press, Madras.

This is a timely and opportune publication. It is an excellent digest of the work of the various League Councils of India. The various sections are clearly arranged and the work in each legislature is succinctly stated. Among the special papers included in it, are—"Changes within the British Commonwealth", "Britain and India", "Colonial Executive Councils and Cabinets", "Communal Representation," "Constitutional Swaraj Committees".

Acknowledgments.

(1) INTERNATIONAL LABOUR DIRECTORY, 1922, issued by the International Labour Office, Geneva. Price 11sh. 6d. (A most comprehensive production.)

(2) ANNUAL REPORT OF THE TRADE OF CANADA, for the Fiscal year ending 31st March 1921. Price 30 cents.

(3) Forty-fifth Annual Report of Criminal Statistics for the year ending 30th September 1920. Price 30 cents.

(4) MYSORE GEOLOGICAL DEPARTMENT BULLETIN, Vol. XX—1921, part I. Price Rs. 2.

Topics in the Journals.

(1) THE MALAYAN AGRICULTURAL JOURNAL, March 1923.—Production of Alcohol from Nipah Palms.

(2) BENGAL AGRICULTURAL JOURNAL, March 1923.—(a) Some improved Gur Furnaces. (b) Some common Fibre plants by N. C. Basu, M.SC.

(3) THE JOURNAL OF THE MINISTRY OF AGRICULTURE, August 1923.—Agriculture is a career for Boys by G. W. Olive, M.A.

(4) CALCUTTA REVIEW, August 1923.—Mahomedan Education by Major H. Suhrawardy, M.D., etc.

Indian Activity in Europe.

For three months now the *Industrial Review for India*, a monthly magazine published from Berlin-Halensee (Georg Wilhelmstrasse 7-11), Germany, has been coming to us. The magazine was formerly named the *Indo-German Commercial Review*, and was published by the India News Service and Information Bureau. But after the first issue, the Bureau abandoned this enterprise because it was "overburdened with educational and other work," and the editors accepted the sole financial and editorial responsibility of the publication. The magazine is not only edited by Indians, but is owned by them exclusively. Judging from the contents, the new name chosen for the *Review* is more appropriate than the older one. The magazine is not purely commercial, but is industrial as well. Each issue contains, under the heading "News and Notes," from twenty to thirty lengthy news notices on the latest industrial, commercial and technical developments, not only in Germany, but in the entire European continent. The "Review of the Press," which is another permanent department, takes some of the most significant news from various European publications which we in India would be unable to read were they not conveniently translated for our use.

We are especially glad to note an article on "Indian Business Morality,—A Reply to German Critics," contained in the September issue, which is a sharp and straightforward reply to a number of Germans who have recently written in the German press attacking Indians as being without business morality. This article should be carefully read by every Indian who engages in business with Germany. The reply in the *Review* fittingly presents our standpoint. It is unusual for an industrial magazine to champion the cause of the working class, yet this *Review*—with a divine contradiction which is Indian—has announced this as one of its intentions, and has begun to carry out this resolve in an article in the September issue on "India's Industrialization,— and some connected social problems." The *Review* has a very direct and definite tendency; it is national; and within its national vision the peasants and the working class occupy a position of pre-eminent importance. "We believe," one of its articles states, "that no real progress is possible in our country without a thoroughly enlightened working class; we shall pay special attention to the question of the organization and education of industrial and agricultural workers, with particular reference to vocational schools, co-operatives, etc." That this is not a cover under which to preach such State Capitalism as that which masquerades under the name of Communism in Russia to-day, is shown by the attitude of the *Review* toward the mechanical and "purely mechanistic theories of Karl Marx." We welcome this new and promising publication. Its annual subscription rate of eight shillings is by no means high when we remember the rich material which is offered through its pages.

Indian Science Congress.

The Eleventh Annual Meeting will be held in Bangalore from January 14th to January 19th, 1924. His Highness the Maharaja of Mysore, G.C.S.I., G.B.E., has consented to be Patron of the Meeting and Sir Asutosh Mookerjee, C.S.I., M.A., D.L., D.Sc., Ph.D., F.A.S.B., F.R.S.E., will be President.

Those intending to be present at the Meeting are requested to apply to Dr. J. L. Simonsen, Honorary General Secretary, Forest Research Institute and College, Dehra Dun, as early as possible. The subscription should be paid to the Honorary Treasurer, Asiatic Society of Bengal, 1, Park Street, Calcutta. Those proposing to read papers, should forward the same to the Secretary

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The Founders of Political Economy.

By Albert J. Saunders, M.A., F.R.Econ.S., American College, Madura.

Jan St. Lewinski, D.Ec.Sc., Professor of Political Economy, University of Lublin, Poland, has written an interesting little book with the above title (London : P. S. King & Son, 6/6 net) for which we are all grateful to him. The real object of the study is explained by the author himself :

"I have no intention of giving in the following pages a complete list of all theories which have been formulated since antiquity. My aim is a more modest—or perhaps a more ambitious—one. I have been endeavouring to find among the doctrines advanced more than one hundred years ago such theories as still to-day can help us understand economic phenomena. Such—critical, and at the same time constructive—is the scope of this book. I have tried to separate the chaff from the corn and to put in evidence the theories on which modern economic science can build."

The little book has been well received by the press, as the following press opinions will indicate :

Gloucester Journal :—'This little work ought to be of the greatest use on this subject. It is also a capital way to approach Political Economy to give some account of the leading economists and of their teaching.'

Scotsman :—'A useful introduction to the history of economic theory is the little volume by Prof. Jan Lewinski.....His British training is readily apparent in his selection of matter as well as his general treatment of the subject.'

Irish Independent :—'Deserves to find a welcome alike from professional students of economic science and from the average serious reader. It is a veritable *Multum in Parvo* as regards economic theory, and is at once critical and constructive. The writer has mastered the arts of condensation and selection and one who can say with truth that there is not a single important doctrine from the Physiocrats to our own time that is not set forth with commendable brevity and at the same time critically examined from the standpoint of its utility towards the understanding of modern economic problems. The book is a model of its kind and will serve admirably as a companion to larger and more ambitious treatises on economics.'

The study deals with the beginning of Political Economy, the Physiocrats, Adam Smith, David Ricardo, and the Post-Ricardian Period.

Our author starts off with the pertinent question—What is Political Economy? His answer is—It is the science which deals with laws governing the production, distribution, and exchange of wealth..... We are quoting it simply to lay emphasis on the fact that in speaking of the founders of political economy, we have in mind those writers who in observing economic phenomena have tried to explain their regular recurrence and who have formulated economic laws.

A distinction should be recognized just here between "art" and "science." The mercantilists were more concerned with trying to find out the measures which would help a country to obtain the greatest possible quantity of precious metals. In other words they thought more of the art or arts of obtaining wealth, but the laws which underlie the acquiring of wealth were left for others to observe and formulate. It was not until the working of these laws was observed and definitely stated that Political Economy began to be a science.

This belief that there must be economic laws originated about the middle of the 17th century. It was the change from State control

to a policy of free trade and private initiative that gave opportunity for these laws to operate. It became clear then that there exists a natural order of things and a series of economic laws which cannot be neglected or permanently overruled by the politician. The idea of natural laws as different from the positive ones, emerged out of the discussion of the usury laws, and the export prohibitions of the seventeenth century. It was the writers of the second-half of the seventeenth century that first began to state definitely that economic phenomena were subject to laws and that the power of the legislator had its natural and serious limitations. The clearest and most general statement of this idea may be found in the writings of Sir William Petty (1662).

Long before the 17th century it was observed that any debasement of the coinage had a direct influence upon the value of money, and hence the level of prices. In the fourteenth century, France suffered from a number of such debasements. In that one century the monetary standard had been altered at least thirty-eight times, and as a result gold and silver disappeared from circulation, trade relations with foreign countries were cut off, all payments became uncertain, prices rose high, and even the king himself suffered, because his revenues were paid in a money which had lost its fixed value. It was the observation of these facts and others similar to them which led Thomas Gresham in 1596 to formulate his famous law:

"When two sorts of money are current in the same nation of like value by denomination, but not intrinsically, that which has the least value will be current, and the other as much as possible hoarded. Or in other words —'bad money drives out good'."

A great deal of thought was given to money in the 16th century. It was noticed that the discovery of the rich gold and silver mines of America and the large amounts of precious metals which had been brought to Europe had caused a considerable rise in prices, in wages, and in land values. Copernicus, the famous astronomer in 1526, came to this conclusion that "money loses its value when it has been too much multiplied." This quantity theory of money was developed in the seventeenth and eighteenth centuries.

A study of early political economy shows us that, beginning with the fourteenth century, almost all writers dealing with monetary problems had a very clear conception of the rate and function which was performed by money in the social organism. They were aware of the fact that an increase of money is not necessarily advantageous to society, "for money" observed Petty, "is but the fat of the Body Politic, whereof too much doth as often hinder its agility, as too little makes it stick."

The quantity theory of money contained already the germs of the law of supply and demand, in making the rise and fall of prices dependent on the greater or smaller quantity of money in circulation. There was distinctly observed a relationship between demand and the movement of prices. As early as 1690 Barbon, in his Discourse of Trade, said, "So that plenty makes things cheap, and scarcity dear." and John Locke (1691) said: "He that will justly estimate the value of any thing must consider its quantity in proportion to its vent, for this alone regulates the price." The fact that according to the greater or smaller demand the same commodity could bring a different price, led to a distinction being made between the value in use and the value in exchange, which Adam Smith expressed so clearly a century later.

The theory of production like the idea of natural laws and the theory of money arose out of the discussion of real practical problems of the day. In the seventeenth century there was a struggle for political supremacy between England, France and Holland. France was a large, powerful nation; Holland was a small, commercial nation; the question for England was which nation and policy should she follow? Sir William Petty wrote strongly against the idea that the dazzling splendour of the Court of Louis XIV was an indication of the wealth and power of France. His position was that "A small country and a few people by its situation, trade, and policy, may be equivalent in wealth and strength to a far greater people and territory." He showed that Holland gave real evidence of great wealth by its natural situation, the use of improvements and machinery, and the practice of the division of labour. Adam Smith was not the first man to state the advantages of the division of labour; Holland had been practising it a hundred years before Smith wrote. Petty in seeking to analyse the sources of Holland's wealth states clearly the three requisites of production which we classify to-day as Nature or Land, Capital, and Labour.

As we have already seen the earlier economists had observed and stated the laws pertaining to the theory of money, of prices, and of production as early as the sixteenth and seventeenth centuries. But the theory of distribution only came and was formerly stated much later. These earlier observers were more or less independent workers; economics was not yet regarded as a science and these writers did not organize anything in the nature of a school of thought.

The Physiocrats.

The first real school of economic thinkers was the Physiocrats of France in the eighteenth century. The two great names which stand at the head of the list are, Quesnay (Tableau Èconomique) and Turgot (Reflexions), while Adam Smith in England reflected many of the ideas of this school in his famous Wealth of Nations (1776). The Physiocrats based for the first time their whole system on the conception of laws governing economic phenomena. They sought to overthrow absolutism by a theory of natural laws. They posited the *natural order* (ordre naturel), which is instituted by God in opposition to the *positive order* (ordre positif), which is the work of man. These Physiocrats tried to discover the laws underlying economic conditions and by so doing they became the pioneers of economic service. It is evident that Adam Smith owed much to Quesnay's Tableau Èconomique and Turgot's Reflexions; but they merely sketched the fundamental economic doctrines, while it was reserved to Smith to draw the great lines of economic systems, so clearly that all might see and understand.

The Physiocratic system divided society into three classes: the class of proprietors, the productive agricultural workers, and the artisan or wage-earning class. This division corresponded to the social structure of France at the end of the eighteenth century. The conclusion which the Physiocrats drew was that the soil is the only source of wealth. As Quesnay says: "May the sovereign and the nation never forget that the earth is the only source of riches, and that it is increased by agriculture."

Perhaps the most original part of the Physiocratic system is its theory of capital. Prof. Lewinski says that the theory of capital is a purely physiocratic invention. Turgot expresses the theory in these words: "Whoever either from the revenue of his land, or from the wages of his labour or of his industry, receives each year more values than he needs to spend, may place the superfluity in reserve and accumulate it: these accumulated values are what is called a capital." So it is these accumulated riches that Turgot calls capital. Distribution consists of rent to the proprietors and wages to the agricultural workers. The Physiocrats advanced nothing new in connection with the theory of money. Money according to Quesnay, is only a medium of exchange; it is not a sign of wealth, in fact, too much money may be unfortunate to a nation. The great theory of the Physiocrats was that the well-being of society depended on the greatness of the net product (produit net) obtained from agriculture. While the greatest weakness of the physiocratic system was doubtless limiting the term productive exclusively to agriculture, Dr. Lewinski says:

"In considering the Physiocratic system as a whole, we may say that it resembles those early drawings of the human body which can be found in old medical books. Only some organs are represented there, others being quite neglected. The ground rent dominates the whole process of distribution, in which there is no place for interest or wages. Nevertheless, we are much indebted to the Physiocrats for having separated Political Economy from other sciences and for having tried to embrace for the first time in one system the whole economic process of production, distribution and exchange."

Adam Smith.

So far as the British economists are concerned, Adam Smith takes the place of prominence among the founders of the science of Political Economy. He expressed his views in the first instance in a series of lectures given in Glasgow University, Scotland, in 1763 on Moral Philosophy. Out of these lectures grew two books: Theory of Moral Sentiments, and an Inquiry into the Nature and Cause of the Wealth of Nations. Between the publication of these two books Smith had spent some time in France, had come into contact with the leaders of the Physiocratic School, and continued correspondence with Turgot. These two works of Smith are parts of a great social synthesis. In the Theory of Moral Sentiments he emphasizes *sympathy*, in the Wealth of Nations he emphasizes self-interest, or what he calls the *economic principle*, and he attempts to show how they lead to harmony. These two motives, sympathy and self-interest, are, in the opinion of Adam Smith, the two ties which unite society.

In the Wealth of Nations Smith developed his Theory of Production along the lines of *division of labour*. His illustration of pin making is a classic. His theory of capital appears in three forms :—

1. As an instrument of production.
2. As a fund maintaining the workman.
3. As a source of revenue.

Smith develops his argument at some length in the Wealth of Nations, but I have time here only to mention his chief contributions to the subject.

Adam Smith laid the foundation of the theory of distribution in pointing out that the whole produce from an enterprise should be divided into three parts. He said :

"Wages, Profit and Rent are the three original sources of all revenue as well as of all exchangeable value. Whoever derives his revenue from a fund which is his own must draw it either from his labour, from his stock, or from his land. The revenue derived from labour is called wages, that derived from stock, by the person who manages or employs it, is called profit ; that derived from it by the person who does not employ it himself, but lends it to another, is called the interest for the use of the money..... The revenue which proceeds altogether from land, is called rent, and belongs to the landlord."

In summarizing Adam Smith's contribution to Political Economy, Lewinski says :

"Where complex economic phenomena were concerned, Smith did not succeed in unravelling them. His mind was better suited for the investigation and description of those phenomena which could be observed on the surface of economic life. Here is the field of his greatest triumphs. Nobody before him has described in the same masterly way the oscillations of prices, interest and wages, which are produced by a greater or smaller supply or demand. His chapters dealing with these problems can be considered even to-day as classics and unsurpassed..... The doctrine of free trade was intimately connected with his name..... But Smith was not an enemy of every State intervention. His doctrine cannot be identified with a policy of a "laissez faire, laissez passer" admitting of no exceptions..... We may conclude that Adam Smith advanced political economy a great deal. He created its method, he laid the foundations of the theory of distribution. Though he did not discover the theory of the division of labour and the law of supply and demand in any way, yet thanks to his presentation, they became generally recognized principles of political economy. From rude fragments, such as they were in the works of his predecessors, they became artistically worked out masterpieces in the Wealth of Nations."

David Ricardo.

The man who succeeded Adam Smith in prominence among the founders of the British classical school of political economy is David Ricardo, who became famous after the publication of his Principles of Political Economy in 1817, but Ricardo was unfortunate, because, as he himself declared, "There were not more than twenty-five persons in England who had understood his book."

Ricardo's Principles are limited to the consideration of one division only of economic problems—namely, to the theory of distribution. He says in the preface : "To determine the laws which regulate the distribution is the principal problem in Political Economy : much as the science has been improved by the writings of Turgot, Stuart, Smith, Say, Sismondi, and others, they afford very little satisfactory information respecting the natural course of rent, profit and wages."

Ricardo sought to determine the proportions of rent, profit and wages, which should go to the different classes of society, namely, those depending on land, on the accumulation of capital, and on the rewards of labour. The real centre of Ricardo's system is his theory of value, not "the absolute value of goods, but their relative value,—in other words, their *value in exchange*." "The value of a commodity," writes Ricardo, "depends on the relative quantity of labour which is necessary for its production." ....."I affirm only that their relative values will be governed by the relative quantities of labour bestowed on their production." This proposition is argued at length throughout Ricardo's book but I have time here only to state it in this bald way. The central idea in this theory of value is Ricardo's belief that *profits tend towards an equal level*. The modern answer to Ricardo's labour theory of value is Jevons and the Austrian School's theory of marginal utility, but into that interesting contribution we cannot now go.

Perhaps David Ricardo is best known by his important theory of rent, which is stated briefly as follows :

"With every step in the progress of population which should oblige a country to have recourse to land of a worse quality, to enable

it to raise its supply of food, rent, on all the more fertile land, will rise.....whatever cause may drive capital to inferior land, must elevate rent on the superior land." While on the other hand "Every improvement in agriculture, which enables the country to abandon the cultivation of less fertile soils must lower rent."

There is nothing essentially new in Ricardo's theories of wages, of money, and of profits, and so we shall pass to a brief word of summary.

"Together with the works of the Physiocrats and of Adam Smith, Ricardo's Principles played a prominent part in the history of the free trade movement. His theories influenced in another respect the social history of the nineteenth century. His rather pessimistic view on the future of humanity gave to the socialistic camp the weapons for the attack on the capitalistic regime.

These political struggles belong partly to the past, but Ricardo's work has not lost its theoretical importance. We owe to him the most precious gems of political economy—the theory of value and the theory of rent."

Of the post-Ricardian Period Dr. Lewinski says: "J. B. Say was the first systematizer of political economy. His Traite'd' Economic Politique (1803) is divided into three parts:—

1. De la Production des Richesses;
2. De la Destribution des Richesses;
3. De la Consommation des Richesses.

James Mill had added to these three divisions the theory of exchange. In his Elements of Political Economy (1821) we find the following chapters:—

1. Production; 2. Distribution; 3. Interchange; 4. Consumption.

John Stuart Mill did not include consumption, because, as he rightly pointed out, we do not possess any law of consumption which should form the object of theoretical inquiry. Thus the definition of Political Economy, as a science dealing with laws governing the production, distribution, and exchange of commodities, has been formed.

In this period Von Thunen's law of relativity is the only addition of importance to the theory of production. Thunen's law is that more scientific and more productive system of agriculture can develop themselves only where the price of corn is high. In districts with low prices they cannot exist, and there less productivity systems are more appropriate. Since Ricardo's Principles there has been scarcely any progress made in the theory of distribution. But it is different with the problem of money and the mechanism of exchange. During the nineteenth century some notable books have appeared dealing with these problems, as—Goschen's Theory of Foreign Exchanges (1861) and Bagehot's Lombard Street (1873).

Two schools of thought during this later period have had much prominence and influence, and they are the most important contribution to economic thought since the days of Ricardo. They are: the Historical School of Germany, and the Psychological School of Austria. These two currents of thought have given to modern political economy, especially in Europe, its most characteristic expression. In conclusion, let me say that the Great War has tried all economic theory as by fire. We may be sure that some of the old theories will pass away, and that we are entering a day of new interpretation and application of economic principles. We may expect much from such writers as Prof. Pigou and J. M. Keynes, and the Cambridge Economic Hand Books. They aim at a systematic exposition of economic theory from the present-day standpoint, and we can look for the publication of some real contributions in the near future.

Dr. Charles Proteus Steinmetz, the eminent electrical engineer of the General Electric Company, successor-elect to Thomas A. Edison, has brought down a myriad of humming batteries about his head by prophesying that by the year 2023 mankind will not have to work more than four hours a day. Electricity of other forces will do the rest. America is appalled at the boresome outlook. What can anybody do with twenty hours of daily leisure, after the eight hours of sleep have been deducted? Dr. Steinmetz is being challenged from all parts of the country to answer the question. He is politically a Socialist, and he is asked whether the four hours work-day will bring with it compulsory amusements enforced by the Government. No more motor-cars can safely be operated in American cities; the streets are already littered with the maimed and the dead. The new leisure will have to be spent in comparative quietude. No speed; just passive adjustment to a rocking-chair environment—a permanent laze, watching overhead wires carrying electricity to the workshops and observing atoms hop out of matter like genii to do the first comer's bidding.

The Compulsory Arbitration of Disputes in the United States.

By Virgil Jordan.

America has made few experiments with the compulsory arbitration or settlement of disputes political, legal or economic, and none of these experiments can be said to have been a brilliant success. Americans, in some aspects of their life, have an extraordinary dislike for compulsion, and not much liking for the settlement of their problems by a third party. They want to be let alone to muddle along and solve their difficulties in their own way. With this exception: If there is to be any compulsion or any arbitration, let it be for the other fellow. The public interest, it is admitted, may require that dispute be settled, and then, if the other party refuses to come to terms, the full power of the law should be applied to him.

There is nothing selfish or unfair about this; it is only human nature, of which the American has perhaps a larger share left than some older peoples. Europeans should bear this in mind when they hear the noise of the discussion about the participation of the United States World Court, and when they read of the simultaneous disapproval of the United States toward the Central American Court of Justice which her neighbours to the South have twice tried to set up to settle disputes among themselves. The United States, of course, favours international courts of arbitration, and even compulsion—at the right time and place and for the proper purpose.

At any rate, if the United States is to become an ardent sponsor of the orderly settlement of disputes between nations by means of a court, it is only natural to expect that she should display some talent or inclination or effort in this direction in purely domestic disputes. It would be good discipline for the American temperament, and would better fit public opinion to be calm and open-minded when serious international problems were before an international court, if she had some practice in this sort of thing, in smoothing out conflicts between employers and workers, for instance.

The recent American experiments of this kind, however, have not been encouraging if one looks for evidence of a judicial peace-making or law-abiding spirit among Americans. Indeed, they have indicated rather that special weakness in the freedom-loving American, mentioned above, the tendency to look upon justice, arbitration, compulsion as one-way affairs, excellent for the other party, but not for everybody. During the War the Government found it necessary to set up machinery to put the screws on employers and workers in certain essential industries. It was not unpleasantly severe, however. These agencies, like the National War Labor Board, compromised and generally gave way to the workers, who, after all, had the upper hand. Besides, the government had the pressure of public opinion to rely upon.

In 1920 the first American experiment with a court of compulsory arbitration was set up in Kansas. This court was given the power to intervene in any industrial dispute, to fix wages and working conditions, to fine and imprison both employers and workers who disobeyed decisions, and to take over and operate the industry if necessary to insure continuous production. Its authority might be applied to any industry deemed to affect a public interest.

This experiment was prompted by a nation-wide coal strike and was largely the result of the Governor's desire to do something striking too. The state of Kansas is largely an agricultural state, with very little local industry upon which the population is strictly dependent. It was, therefore, a place where such an experiment would be harmless, and where it would face fewer difficulties than it could in almost any other section of the country.

As a fact it has proven thoroughly innocuous. It has been confronted by few crucial disputes, and in these—the railroad strike and the recent coal strike—it evaded action. It has been the subject of local political manœuvreings and, until the governor who created it was defeated in the last election, he made it a means of nation-wide publicity for himself by stimulating a largely fictitious controversy about its merits and dangers. Both labor unions and employers opposed it, not because of anything it did to tread on the toes of either, but because of what they were led to believe it might do.

In two cases where it did touch the interests of either side, its weakness, and the weakness of the American temperament in such

situations, became apparent and has finally led to the practical nullification of the Court. When the leader of a local miners' union refused to obey the Court's order to have his union resume work he was sent to jail. This did not mine coal, but it won approval among employers, who felt reassured about the Court. When the case was appealed to the Supreme Court of the United States, the Court avoided a decision and the rebellious labor leader stayed in jail till he was released by the new Governor, who was hostile to the Court.

Then the Industrial Court tested its powers over the other party to the everlasting industrial conflict. It undertook to fix wages in a meat-packing plant above what the employers offered or, as they said, were able to pay. This case also was appealed to the Supreme Court of the United States and the Supreme Court has decided that the Kansas Industrial Court cannot fix wages for an employer under the constitution of the nation. Otherwise the Court, for all the decision says, may continue functioning—that is it may ask both parties to a dispute to appear before it, reach a decision and may punish strikers who disobey such a decision, but it cannot punish or coerce employers. This instance of compulsory arbitration has therefore been put back on to the proper American plane. Several other states which have been contemplating similar legislation will doubtless feel that there is now no need of it. Enough ways already exist by which the state can disrupt strikes and coerce unions.

This aversion to a double-edged machinery for the settlement of industrial disputes is reflected also in the position of the Railroad Labor Board, established to adjust disputes between railroad workers and managements. The Transportation Act which established this tribunal at the same time fixed a definite rate of return for the capital invested in the railroads. The Railroad Labor Board, however, was given no authority or power to fix wages, or to compel the railroads to pay certain wages or adopt certain working conditions. It was permitted only to reprimand the railroads publicly if they disobeyed a decision. When it tried to do this in the case of one railroad which flagrantly defied it in the matter of recognizing the union in the election of certain employee committees, the railroad appealed the case to the Supreme Court. The Court has decided that such a public reprimand is permissible by law, and the Railroad Labor Board has slapped the offender's wrist publicly very hard, but the railroad in question has continued to ignore the Board's orders. In the shopmen's and other railroad strikes, however, the Board has mobilized the whole force of the government, its legal machinery and soldiers, and of public opinion, to compel the workers to obey.

When the whole railroad problem is aired in the next Congress and partially aired in the President's speeches this summer, there will be much discussion of proposals to give the Railroad Labor Board more "teeth" for the settlement of labor disputes. But the Board already has shown that it has one set of real teeth ready for the railroad unions and another set of false ones to be rattled at the managements, and it is not likely that either party will tolerate any more.

Thus while the American temperament in general does not mind laws promoting the adjustment of social, economic or political conflicts, it is not as yet willing to have teeth in them. It likes the idea of watch-dogs guarding the peace, but it prefers toothless ones. Perhaps because, in its political experience, it has been bitten too often.

In consequence, while governmental arbitration tribunals in general are perfunctory affairs, private arbitration and other private means for adjusting disputes in business, in industry and in other phases of social life are growing and are fairly successful. Works Committees in industry are increasing in number and functioning fairly well. In New York and other cities private arbitration courts are rapidly developing. These means of promoting adjustment seem more adapted to the American 'laissez-faire' philosophy, and this attitude carries over into the American view of international relations and partly explains the American suspicion of the League of Nations and the World Court.

Paper in India.

In a survey of the industries of the country, Industrial India observes: The paper industry presents excellent prospects for development. The annual consumption of paper and paste-board amounts to over 75,000 tons, but at present two-thirds of this quantity is imported. There is no reason why this state of affairs should continue. The forest areas contain enormous supplies of bamboo and elephant grass, which could be utilized for the manufacture of all the paper and paste-board required for local needs.

The Problem of Trade Revival.

The suggestions now current, emanating from a variety of sources, as to the best means of encouraging a return of general economic prosperity in this country, and the views expressed as to the effects upon that problem of the political developments of recent months are among the many difficult questions which call for impartial examination.

The position at the moment is sufficiently critical to demand most careful investigation. It is true that British trade has improved since 1921, but it is even now probably at a level 20 per cent below the volume of 1913. Furthermore, not only has trade in the second quarter of the present year shown a recession from the level of the first, if allowance be made for changes in the area covered by our trade statistics, but the prospects for the future, contrary to general expectations, have become less bright. The President of the Board of Trade in a recent speech in the House of Commons, remarked that orders were not coming in to manufacturers as freely as had been expected and that the prospects were now worse than in December and January last. Such an authoritative opinion, based upon wide information, must be treated with the maximum of respect, more particularly as it accords with current and independent reports from industrial centres.

The World an Economic Unit.

If for the purpose of this article we confine our attention to foreign trade, important considerations arise. The first quarter of 1923 brought with it the occupation of the Ruhr Valley, with the immediate consequence of a quickened demand for British coal, iron and steel to meet the requirements of markets previously supplied from that area. All this was to the good, except so far as the heavy purchases of those commodities restricted the German demand for other British products. But any net benefit which may have arisen could only be temporary, and, even while it lasted, must have had an unsettling effect upon British industry as a whole through the uncertainty introduced into production costs by the fluctuating prices of coal. It cannot be too often reiterated that the world is a single economic unit. The strangulation of a pre-eminent manufacturing entity is for all practical purposes equivalent to the physical destruction of industrial areas, together with their plant, mines, and means of communication, and the devastation in one important section of the world's productive mechanism must take itself felt wherever economic connections, direct or indirect, may carry its reactions. It is difficult therefore to understand how the argument can be contested that so far as our markets as a whole are impaired by present conditions the demand for our products is curtailed and the activity of our industries reduced.

Great Britain's Livelihood.

An important fact, never to be lost sight of, is that this country is probably unique among the nations of the world in the degree of its dependence upon foreign trade. France and many other countries can live within a ringed fence. We cannot. Hence the absolute importance of the fact that the volume of our export trade has contracted by 20 per cent as compared with 1913, and that, in part as a consequence, we are still faced with an army of a million and a quarter unemployed. But, in truth, the facts underlying these figures are of even more serious import. Since 1913 the population of Great Britain has increased by two millions, and in order to maintain a standard of life approximately equal to that enjoyed in 1913 our national income should be proportionately larger than at the earlier date. Our capacity to increase the national income is, however, impaired by the fact that, owing to war deaths and disablements and to a high birth rate and low death rate, the age composition of the population is less effective for productive purposes, with the result that the earnings of each person engaged in work of marketable value has now to be distributed among a large number of invalids, children, aged and idle, than was the case before the war.

Under these circumstances Great Britain, unless her people are to be subjected to a lower standard of living, is faced with the choice between reducing her population or very considerably increasing her trade. Leaving aside the former alternative, opinions differ widely as to the method of bringing about trade expansion. It is sometimes argued that the present situation in Europe is to our advantage. The improvement of trade in 1922 over the previous year is pointed out, but it is forgotten that 1921 was marked by a prolonged dispute in the coal industry, and that by 1922 the liquidation period had practically run its course, prices had become

stabilized, and the theoretical conditions precedent to trade revival were present. Comfort is taken from the maintenance of the improvement in the first quarter of 1923, but the fact is completely ignored that Germany cannot go on indefinitely purchasing from abroad unless she is permitted to make complementary sales, and that the trade of our other customers must shrink as the aggregate volume of international trade contracts.

THE TASK OF REVIVING TRADE.

While the restoration of Europe to her old productive efficiency is most desirable as a means of procuring general world prosperity, it would appear on more detailed consideration to be an essential to the trade recovery of this country. As a rough apportionment, nearly one-third of the marketable energy of our people is absorbed by production for external demand. And while it is true that this proportion is not fixed and that it is possible to stimulate home trade without effecting any change in foreign demand, yet it is none the less true that a curtailment of our export trade must inevitably cause a reduction in the home demand for the output of our industries.

The task of reviving our export trade is therefore among the most exacting with which we are faced at the moment. The stage to which world development has already advanced precludes the possibility that entirely new geographical areas can provide new markets. But the possibility exists that the closer settlement of areas already occupied might increase the effectiveness of markets as yet in the early stages of development, and the presence of these potential purchasers of British goods has been fastened upon as a panacea for our industrial ills. A closer examination, however, should have a sobering effect upon those who advocate it as a remedy which can be put into operation at once with immediately perceptible benefits.

THE PROJECT OF EMPIRE DEVELOPMENT.

The view is widely held that there is scope for an expansion of our trade with Empire markets. Taking a long view Empire development is a policy which merits the strongest encouragement. A consideration, however, of the difficulties involved leads to the conclusion that it cannot hope to meet our immediate and imperative need, which is to secure remunerative employment for our people at the earliest possible date. One of the basic considerations in this connection is that of the number, rate of growth, and composition of the population of the Empire. Between 1911 and 1921 the total white population of Canada, Australia, South Africa and New Zealand grew from about 14,000,000 to nearly 17,000,000, or by about 21 per cent. This is admittedly a fairly rapid increase, but even now the total white population of the British overseas possessions, excluding Southern Ireland, is only a third of that of Germany, or not much more than one-half of that of France. There is in addition to the white population an enormous coloured market which, however, cannot absorb a large part of the products for which our equipment is especially adapted and which we formerly supplied to cultured western communities. It would seem, therefore, that owing to limitations of population Empire development offers little prospect of materially improving our industrial situation in the near future. An examination of the trade figures, moreover, reveals a much greater consumption of British goods per capita in the case of the overseas possessions than in that of foreign countries. In 1913 the external trade of the former was more or less equally divided between the United Kingdom and the rest of the world. The proportions have varied somewhat as a consequence of conditions arising out of the war, and Great Britain's share in Empire trade is probably now a little greater than it was before the war. The margin of possible improvement in the British ratio is, however, not co-extensive with the amount of trade still being transacted with other countries, for many of the commodities imported into our overseas possessions cannot be supplied by Great Britain and many of their exports could not be absorbed by this country. Furthermore, the diversion of trade from old channels will not in itself be conducive to the restoration of world trade, which is a pre-requisite for our own recovery. A measure of trade expansion could certainly be secured by lending more to Dominion borrowers, but this is an operation which, if forced, is liable to encourage uneconomic development and in any case is limited by the surplus of production over our own consumption and capital needs. While, therefore, it is undeniable that Empire development and Imperial co-operation offer advantages of first importance it would seem that they can assist but little in the solution of our present problem until the purchasing power of our overseas possessions becomes greater. Ultimately, if the schemes for Empire settlement are carried through on a large

scale, the migration of our surplus population will not only ease the labour situation at home, but will also increase the effective demand for our products and assist in the expansion of world trade.

An analysis of the trade figures for pre-war and post-war years indicates that the distribution of our trade as between the Empire and foreign countries has changed very little since pre-war years despite the extension of the imperial preference principle. The following table illustrates this point :—

Merchandise Trade of United Kingdom with British Possessions and Foreign Countries.

	Percentages of total			
	1913	1920	1921	1922
Imports from—				
British Possessions : ..	24.9	25.4	28.0	28.6
Canada	4.0	4.8	5.7	5.5
Australia	5.0	5.8	6.3	6.5
India	6.3	4.9	4.1	4.7
South Africa	1.6	1.0	1.7	1.6
Foreign Countries : ..	75.1	74.6	72.0	71.4
Collapsed countries of Europe*	17.4	4.1	4.7	6.9
Exports to—				
British Possessions : ..	37.2	34.3	39.8	37.5
Canada	4.5	3.2	2.8	3.5
Australia	6.5	4.7	6.5	8.4
India	13.4	13.6	15.5	12.7
South Africa	4.2	3.7	4.2	3.4
Foreign Countries : ..	62.8	65.7	60.2	62.5
Collapsed countries of Europe*	14.7	7.0	9.1	9.4
All Europe	34.6	37.8	31.7	35.1

*Including Germany, Russia, the Baltic States, Balkans, etc.

Owing to the lack of statistics relating to the volume of trade with individual countries, it has been impossible to apply the ideal test and ascertain the actual extent of the variations in our trade with the Empire and foreign countries. The percentages presented in the table are designed to show how our imports and exports were distributed in the years mentioned between overseas possessions and other countries. From these calculations it is clear that the proportion of our imports which originated within the Empire has increased somewhat as compared with 1913. On the other hand, the distribution of exports as between British possessions and foreign countries has remained practically undisturbed.

Necessity of European Restoration.

To conclude : The idea of rendering the Empire as far as possible self-contained may meet with ready support, but Imperial development must necessarily be a slow process and, therefore, incapable of solving our present problem. The result is that we are driven back on the necessity of endeavouring to rehabilitate our old markets, so that the general productive efficiency of the world may be raised from its present low level, the purchasing power of our customers restored, and our trade enabled to resume its unimpeded course in an appropriate volume. This restoration obviously demands as a preliminary the pacification of Europe.

Indian Affairs in the Commons.

In the House of Commons recently, Mr. Tom Smith (Labour, Pontefract) asked the Under-Secretary of State for India, if he would state the total number of men, women, and children under the age of 14 employed in underground work in the coal mines of Bengal, Central India, and Southern India ; and what were the average wages for men, women and children so employed.

Earl Winterton : The number of men, women, and children employed in underground work in the coal mines of British India in 1921 was 65,786, 42,000 and 1,171 respectively. The returns relate to children under 12 (not under 14). About 90 per cent of the above workers were employed in Northern India (Bengal and Bihar and Orissa). Statistics of the average wages paid are not available.

Indian Trade Unions.

Mr. Saklatvala (Labour, Battersea) asked when the Act for legalising and protecting trade unions in India was first drafted ; how long it had been under consideration of the various Provincial Governments and public bodies in India ; when was the final draft likely to be ready ; and would any opportunity be given to the House of seeing the final draft before it passed into law in India, and before it obtained the final sanction of the Secretary of State for India in Council.

Earl Winterton :—The Government of India first addressed Provincial Governments on the subject of legislation for the registration and protection of trade unions in a letter of September 12, 1921. The matter is still under consideration, and I am unable to say when the final draft of the Bill will be ready. Copies will be available for the library as soon as it is introduced.

Agriculture and Fisheries in Travancore, 1921-22.

By " Rusticus ".

1921–22 was a quiet year for the Travancore Agricultural Department but, on the whole, was one of steady progress. The small scale experiment appeals as strongly as ever to Dr. Kunjan Pillai and his staff but it is only fair to them to say that results of value have been obtained from their small plots and that varieties and methods found successful on them have, in many instances, proved equally so when grown or applied on a far larger scale. We need hardly remind our readers that the main work of the Agricultural Department in Travancore is on paddy and cocoanuts. The manurial and spacing experiments on the paddy farm at Nagercoil still continue. The manurial experiments fall into three series. The object of the first series is to test the comparative merits of oil-cakes, the second those of nitrogenous manures and the third those of other fertilizers. Of the oil-cakes, ground-nut cake, as in the previous year, proved the best, castor cake being a good second. Of the nitrogenous manures, a mixture of 280 pounds of green leaf and 9 pounds of ammonium sulphate (applied to a plot seven cents in extent) gave the best results. Nitrogen in the form of ammonium sulphate was found to be more efficacious than in the form of calcium cyanamide and green leaf applied in conjunction with either of them produced a better yield than when applied alone. The results obtained during the year differed from those obtained in the previous year so that the experiments are still far from conclusive. In the third series, which was only started during the year, the best yield was obtained from a plot, seven cents in extent, manured with 150 pounds of calcium cyanamide (nitrolim) costing Rs. 25–2–11 per acre and the next from a plot manured with 400 pounds of Parry & Co.'s garden fertilizer costing Rs. 26–11–6 per acre. The yields to the acre obtained in this series were more than double those obtained in the second series and half as much again as those obtained in the first but it is not possible to say how far this was due to difference in the efficiency of the manures and how far to difference in soils.

The spacing experiments again showed that single seedlings planted nine inches apart gave the best yield. But more work has to be done before final conclusions can be drawn since, during the first two years of the experiment, the best results were obtained from seedlings planted twelve inches apart, and, in one of these years, the nine inch distance proved the worst of the four which were tried.

We mentioned last year the interesting experiment which was being started with the object of determining the minimum requirements of water for the paddy crop and its importance in view of the way in which, everywhere in India, the ryot wastes water when he can get it. Both in 1921–22 and in the previous year, the plot to which thirteen waterings were given and which was never allowed to get dry gave a much better yield than the plot irrigated six times, on each occasion to the depth of three inches. It would be easier to gauge the value of the experiment if the actual amount of water used in both cases had been stated. Small doses at frequent intervals may be better than large doses at longer intervals but what one wants to know is how the total quantity of the doses compared. This is the important point to the irrigation engineer. In any case we trust that no one will jump to the conclusion that what has been found good for paddy is equally good for other crops such as wheat, cotton or sugarcane.

The only varietal tests the Department is undertaking have as their object the discovery of early varieties suitable for cultivation at the tail-ends of the irrigation channels in South Travancore. The two staple varieties now grown in that tract are on the ground for four and six months respectively and it is not surprising therefore that something which ripens earlier is considered necessary at the ends of the channels where the water-supply is short. A variety known as Thooyamali with a duration of 94 days and another known as Panamkuruva which is on the ground for 97 days, are specially promising but there are others which are nearly as good. These are already being distributed to the cultivators and are also being tested on the new demonstration farm at Eraniel which is itself near the tail-end of one of the irrigation channels.

It has always seemed to the present writer extraordinary that the Agricultural Department in India took so long to discover that the only way to bring home to the ryot the value of agricultural improvements was to

demonstrate their advantages to him on his own land. This was one of those discoveries which look so simple when they have been made but take a long time to make. Anyhow, the demonstration farm, of which the ryot was so suspicious as he thought that, however good the crops it raised, the methods adopted to raise them were entirely beyond his means, has everywhere been discarded for the demonstration plot. In 34 villages in Travancore the advantages of cultivating paddy in the way recommended by the Department as compared with the usual way were revealed to the ryot by ocular evidence supplied by his own land. The increased yield obtained by following departmental methods averaged 522 pounds and the net gain per acre was Rs. 17–8–7. A comparison of the figures with those obtained in the two previous years is interesting as it shows that it is in a bad year that the advantages of improved methods are most evident. In 1919–20, the worst year of the three, the difference was 694 pounds. In 1920–21, the best, it was 502 pounds. In 1921–22, as we have said, it was 522 pounds.

The experiments on cocoanuts can now be said to have established definitely the value of manures for the trees and of the intense cultivation of cocoanut gardens. But it has yet to be discovered which is the most effective manure and which is the best distance at which to plant the trees. Experiments are being conducted to this end and a study of varieties is also being carried on at the cocoanut farm at Alleppey where no less than 47 varieties are being grown.

As for work on other crops, Red Mauritius has again proved the best variety of sugarcane and gave the excellent yield of 4,970 pounds of jaggery to the acre. As we said last year, it is difficult to see how an experiment on half an acre of land on the paddy-farm at Nagercoil can show whether or not cane can be successfully grown on paddy lands at the tail-ends of the irrigation channels in South Travancore or again, how an experiment on half an acre on the cattle farm at Trivandrum can establish its suitability for poor laterite soils. The report says that the extension of the area under sugarcane in central and north Travancore was the direct result of the demonstrations conducted by the Department on ryot's lands. In this statement we entirely concur for we are certain that the experiments on the farms can have had nothing to do with it.

It hardly needed experiments on the farms at Trivandrum and Alwaye to establish that the climatic conditions of the greater part of Travancore are unfavourable to cotton. The work done at Shencottah shows that there are possibilities for it in the drier parts of the State.

In a country so thickly populated as Travancore, it is inevitable that cultivation should extend to the utmost possible limit and that the green manure problem should, therefore, become a pressing one. The Travancore Government realize its importance and have sanctioned the opening of a seed farm.

What was the effect of the Department's work so far as the ryot was concerned? The figures given for the distribution of seed are, in one view, somewhat disappointing. About 27,500 pounds of selected paddy seed were sold from the paddy farm at Nagercoil, by the Presidents of nine seed unions in Nanjanaud and by the President of the Seed Union at Pallikal. This would not go far nor, in a country where cocoanuts are numbered by the million would the 1,107 selected seedlings sold from the farm at Alleppey or even the 9,278 seeds and the 5,340 seedlings sold by the private farm at Pallikal which works under the supervision of the Department. The figure for manures are rather better. There were ten departmental depots against 13 the previous year, but the number of branch depots which are run by commission agents increased from 11 to 20. These sold manures to the value of Rs. 16,465 but the transactions of private firms brought the total up to something like Rs. 56,000. Dr. Kunjan Pillai should not rest satisfied until he can add another nought to this. As for agricultural implements, the Department appears to deal almost entirely in ploughs. It is interesting to note that an iron plough of local manufacture is proving more satisfactory than the Meston plough. Dr. Kunjan Pillai again contents himself with merely giving the figures of cost for the Fordson tractor which was used during the year mostly for ploughing paddy land in South Travancore, and expresses no opinion as to its real suitability to Travancore conditions. The average cost per acre including fuel, labour and depreciation worked out at rather over Rs. 8 against Rs. 10 to 14 which Dr. Kunjan Pillai gives as the average cost of ploughing with bullock power. He mentions that a much larger area could have been ploughed if the work had not had to be suspended during the ploughing season, for want of a driver and for some slight repairs

to the plough. For some time to come, therefore, it seems probable that the ryot will regard his bullocks as more dependable than a tractor.

The most serious problems presented to the research worker in Travancore are those connected with the diseases of cocoanuts. No progress in the investigation of the root disease, the worst of all diseases attacking the cocoanut palm in this country, could be made during the year owing to the absence of the Mycologist, Mr. Padmanabha Pillai, on leave but the Department did what it could by manuring, drainage and tillage to check the spread of infection and to improve the general health of the trees. In a garden at Pallikal more drastic measures were adopted. Beds were dug round each palm, all the decayed roots and leaves were cut and thrown into these beds which were then sprayed with a fungicide and filled with a mixture of river sand, sterilized soil and quicklime. The whole of the land was subsequently limed and ploughed. The trees are looking much healthier after this drastic treatment but it remains to be seen if a permanent cure has been effected. On the entomological side, the worst pest was the insect *Nephantis Serinopa* which attacked the cocoanuts through the coastal regions badly during the year. The only remedy for it is to cut and burn the affected leaves and thus fortunately there was no difficulty in getting the ryots to do without restoring to coercive action under the Plant Pests and Diseases Regulations. Over 43,000 trees were treated, a very good record.

There is but little to record under the Veterinary head. The Department continues its praiseworthy efforts to improve the local breed of cattle which is pithily but contemptuously described by Dr. Kunjan Pillai as consisting of nothing but poor milkers and bed workers. The 17 stud bulls and stud buffaloes on the two cattle breeding farms and the 17 selected bulls maintained by private persons in different parts of the State with the help of Government subsidies should be beginning to produce an appreciable effect in this direction. Even where rainfall is comparatively heavy as in Travancore, the fodder problem is almost as insistent as in tracts such as the Bombay Deccan where it is very light. We have mentioned the Bombay Deccan as the Travancore Agricultural Department is now experimenting on the lines which have been followed there with the feeding of cattle on prickly pear. In both places, it has been found that prickly pear, if properly treated, provides quite a satisfactory diet. In Travancore the daily ration in the final stage was ten pounds of prickly pear and a small quantity of cotton seed. Travancore was fortunate in escaping any epidemics during the year but, none the less, the number of cases treated at the Veterinary institutions showed a small increase which is satisfactory evidence that they are growing in popularity.

The history of the Fisheries section of the Department is summed up in the last sentence of the Report which states that its receipts were Rs. 14,129 against Rs. 12,510 and its expenditure Rs. 19,672 against Rs. 15,808. In other words, there was little or no progress. As a source of revenue, the Fisheries section has been most disappointing and there does not seem much reason for hope that there will be an improvement in this respect. The question whether this branch of the Agricultural Department's activities is worth continuing seems, therefore, to arise. Its useful socio-economic work could probably be taken over by some other Department.

Coloured Labour.

According to a Cape Town correspondent, some perturbation is felt in the Union as the result of reports to the effect that Australia intends to raise the question of discrimination against commodities produced with the aid of coloured labour in South Africa. It is urged by South African manufacturers that the actual wages paid cannot be regarded as a criterion as to whether a country which has a large coloured population should be considered as an unfair competitor of countries where the inhabitants are all of European race, and that the efficiency factor must also be taken into account. We do not know whether Australia or any other Dominion really intends to raise this issue, but we feel very strongly that it would be very unwise step to do so. While it may be possible for a Dominion to protect itself by means of a tariff against the products of other parts of the Empire where coloured labour is employed, it is obvious that the United Kingdom could not associate itself with any such disruptive policy, which would inevitably provoke ill-feeling and reprisals.

The Federation of German Industries.

Infinitely complex as German industry is, its unity is complete. The bridgeless chasms that divide political parties in Germany find no counterpart in industry, for, however relentless may appear to be the struggles at any given time in one section or another of Germany's infinitely diversified industrial life, industry as such is characterized by its cohesion. That this is possible, is due to its having evolved the organization of the Reichsverband der deutschen Industrie or Federation of German Industries.

To guess the secret of this powerful unity, two points of view must be borne in mind, one, the Reichsverband as it appears from the inside, the other as it functions towards other bodies. The grouping of all the members of each branch of industry into a distinct body to fight the battles peculiar to that group was natural and obvious. The formation of parallel associations to guard the more particular interests of each distinct natural industrial division of the German empire was equally obvious. Hence, the emergence from each branch of each industry, and from each part of the empire of dominant personalities, entitled to speak for each branch of Germany's vast industrial complex both as regards the industries themselves and the districts in which they are situated. It is clear that, were such a body of prominent men to meet for discussing all vast questions affecting industry as a whole, these would form a natural "Parliament of Industry," capable of directing the complex whole.

Such a body does exist, writes a correspondent in the *European Commercial*, and does direct the development of German industry. In one of the most beautiful parts of Berlin West, housed in palatial office premises, the Reichsverband carries on its work. Its permanent salaried staff consists of specialists, each closely in touch, through the daily and technical press, through correspondence and through personal visits, with the affairs of his own branch. When a crisis of special significance arises, demanding an immediate and definite attitude by industry as a whole, this permanent staff of specialists summons to Berlin the industrial "three chamber parliament" as it might be called. No spur is needed to produce a prompt and willing response to the call, for matters of vital moment to every industrialist are sure to be involved.

Organization Details.

The first "house" to deal with the matter in hand is the Präsidium or Council of 27 presidents. Men of life-long experience in industrial government, men intimately conversant with one another's personal views and prejudices through years of close association, this small body soon arrives at a unanimous attitude on the matter in hand. The result is made known to the Presiding Council of 81 members, who, in their turn, pronounce judgment, but with more preciseness, finally sending the matter for conclusive treatment to the "Main Committee" of over 200. Very little room remains for oversights or neglect in treating any issue that may arise. These sittings of the industrial parliament of Germany are no less agitated and violent on many an occasion than those of their political counterpart. Suppose, for instance, such a mundane question arises as that of an increase in the price of coal. On the one hand, the coal owners have reasons to advance to account for the desired rise. These reasons would have to be very potent to justify the summoning of the Reichsverband. The effects of such a rise are, however, very far-reaching, since every industry uses coal, and freight prices directly depend upon coal costs. Certain industries subsist on a very fine margin in times of severe competition with foreign rivals and the rise in the price of coal may imperil their existence. Here the fight for a fair and workable set of conditions is remorseless. Once the decision has been fixed, however, the question of its being absolute is never raised.

National Influence.

Viewed, on the other hand, as one member of many in Germany's corporate life, the Reichsverband plays a very powerful role. It is clear that such a body will be certain to include among its members those with seats in the Reichstag. The Reichsverband itself stands for no special political party or views; it does not even identify itself with the so-called People's or Industrialists' Party; its members belong to all of the great political parties. It need not be unduly emphasized, however, that on all of the industrialist members of the Reichstag, the attitude and decisions of the Reichsverband must have a powerful influence in determining the attitude taken by them in the Reichstag when measures

vitally affecting industry are under consideration.

Another body peculiar to Germany's special form of government is the Reichswirtschaftsrat or State Industrial Council. This is an assemblage of over 300 leading personalities nominated as a council by the Government to advise the Government on all measures intimately affecting the economic life of Germany. Besides industrialists, the Reichswirtschaftsrat includes, in its number financiers, bankers, commercial magnates, economists, and journalists. Industry is, needless to say, very strongly represented. One of the functions of this body from time to time is to assist in the drafting of laws of great economic importance. It is also clear that when such measures are in contemplation, the Reichsverband will have determined its attitude at meetings specially convened for the purpose. Since the men who are in the Parliament of Industry are identical with those who represent industry in the meetings of the State Industrial Council, it is not difficult to deduce what a powerful influence the Reichsverband exercises over the Reichswirtschaftsrat and in turn, through the latter, over the Reichstag itself.

Relations with Labour.

The relations of the Reichsverband to the labour world would require a special chapter to themselves. For dealing with the labour problem, German industry has evolved a host of employers' and employees' federations, each for some special trade, but for the treatment of great national questions, *e.g.*, the retention of the "Eight-hour day," the national unions of such federations meet and deliberate. In the employers' federation again, the leading figures are conspicuous in the Reichsverband. It is evident that here too these delegates will not be disposed to deviate widely from the decisions of policy arrived at by the conclave of directors of the Reichsverband. The success of this administration may be gauged from the fact that, despite all the endless dislocation during recent years of violent daily movements of the rate of exchange, strikes on the wages question are of comparative rarity.

But the Reichsverband has still higher ideals of industrial service. The view is held that in the settlement of great international questions, for instance, that of international customs tariffs, political or national bias should be eliminated. Relations between nations should alone be determined by what is most beneficial for trade between those peoples. Vindictive discrimination should be unknown. Instead, therefore, of leaving such matters to non-industrial politicians, the Reichsverband proposes that in other countries bodies similar to itself in structure and function should co-operate to gain unanimity. Up till now little in this direction has been achieved, but along these lines a new regime might be hoped for.

Manufacture of Paper from Straw.

Mills for the manufacture of paper from ordinary straw may soon be established in Canada, according to Sir Frederick Becker, who holds large interests in Canadian pulp and paper companies, and who recently arrived in the Dominions. Through the discoveries of a French scientist, he said, it had become possible to manufacture writing-paper and newsprint from ordinary straw. In Canada straw was nearly always burned, and was a total loss in every respect. If the new process proved successful, Sir Frederick claimed, it would greatly augment the fast diminishing sources of raw material for the pulp and paper supply of the world and bring more prosperity to the farmer, who would be able to dispose profitably of what had hitherto been wasted. Speaking of Canada's huge losses from forest fires, Sir Frederick Becker said that re-afforestation was less important in the presevation of forests than fire prevention. He urged that steps should be taken to prevent a repetition of the enormous destruction caused by fire. The United States, added Sir Frederick, now consumed more paper than any other country in the world. The supply was drawn from Europe as well as from Canada, but as soon as normal conditions were restored in Europe they would require all their own supplies, and the United States would have only Canada to depend upon.

Indo-China was the first French Colony to adopt bamboo in the manufacture of pulp and paper. Works were built at Vietri in 1912, and it is reported that the annual production of bamboo pulp is 3,000 metric tons. Half the production is utilized at a mill at Dap Cau, and among the Journals using the bamboo paper manufactured are several in Tonkin.

Danish Agriculture and the Hygiene of the Nation.

In a Chadwick Lecture recently delivered at the Royal Sanitary Institute, Mr. Nugent Harris gave some interesting particulars of Danish agriculture. Forty per cent of Denmark's aggregate population, which numbers three million people, subsist on agriculture. This figure does not include the South Jutland territories, in respect of which there are not yet available agricultural statistics which may be compared with the Danish figures. No other Danish trade provides occupation for such a large part of the Danish population, and thus we may be justified in describing agriculture as Denmark's main industry. We are still further justified in doing so by the fact that among the trades it is first and foremost agriculture which hitherto has supported the economy of the country, procuring through export 80-90 per cent of the foreign means of payment which is an essential condition of commerce with foreign countries.

In its present form Danish agriculture came into being in the eighties. During these years an important change was effected by which Denmark, from being mainly a corn-selling country, became a corn-buying country, attaching special importance to the production and sale of animal products, more especially butter, pork and eggs and such live stock as slaughter-cattle and draught-horses. These products constituted about 95 per cent of the total Danish agricultural export.

The means which Danish agriculturists adopted in order to secure the special production was the breeding of a live stock of a very high quality. In the summer of 1914 this live stock consisted of 567,000 horses, 2,463,000 head of cattle (including 1,310,000 head of dairy cattle), 2,497,000 pigs and 15,130,000 fowls. For the support of this stock not only the greater part of Denmark's own crop was required, but also considerable quantities of fodder from abroad, principally about 600,000 tons of oil-cakes and about 400,000 tons of maize, the quantity always varying, however, in accordance with the Danish crop. Considerable quantities of artificial manure, nitrate, phosphate, and potash were required to maintain the quality of Danish soil at the level necessary for such an enormous live stock.

Danish agriculture fell into great difficulties during the war, especially during its last phases, when the tightened blockade rendered it difficult to get supplies from abroad. The most strenuous endeavours were used to ward off and mitigate the effects of the blockade, partly by means of forced home production of fodder, partly by means of special efforts to encourage the best breeding material among the live stock. When the seas were re-opened to the free exchange of goods Danish farmers at once proceeded to increase to its full extent the live stock which all quarters admitted to be of vital importance to the future economy of Denmark. These endeavours succeeded.

Before the war 2,463,000 head of cattle existed in Denmark. Of this number 1,310,000 were milch cows. The annual export of cattle and meat was equivalent to about 300,000 head in all, while the export of butter amounted to about 100,000 tons yearly. The exclusion of foreign fodder had a serious influence on the number of the live stock and impaired its capacity, so that the quantity of milk in 1918 was only about half the normal quantity. But now conditions have become again almost normal, and at the same time the Danish butter market has been extended beyond England, and includes Switzerland, Germany, Sweden and Norway, and even America, to which country considerable quantities of Danish butter are sent. In 1922 there were in all 2,286,000 head of cattle, of which 1,113,000 are milch cows, a somewhat lower figure than that of 1914, but, of course, it has not been the poorest animals which have been preserved, but quite the contrary. The quantity of milk is now almost the same as it was before the war.

Industrial conditions applied more to pig breeding than to any other branch of agriculture, and it was, therefore, a natural consequence that it should be hard hit by the blockade. But here again special stress was laid on the necessity of keeping the best breeding animals, and these endeavours were crowned with success, so that the number of pigs is now fully one and a half million as compared with only about 513,000 in 1918. It will not be long before Danish agriculture will reach the level of the stocks held before the war, when the number of pigs was about 2.5 million and when the annual slaughtering at 61 Danish abattoirs amounted to about 3 million pigs.

As to egg production, this became very important during the war, especially for farming

in a small way. Here, again, Danish agriculture hopes soon to be able to produce about 500 million eggs annually, and these, together with 300 million which are eaten in Denmark, constitute the country's total production of eggs. Buyers for this produce are to be found everywhere.

Rebuilding of Europe.

It is Denmark's belief that increased production is the only way to restore Europe after the war. Danish agriculture is prepared to take part in this task, and it has—as mentioned above in connection with those branches of production which are the cornerstones in agriculture—kept its capacity in effective order, although not unimpaired. Danish soil, which suffered much on account of the difficulty of importing artificial manures in 1918 and 1919, has now regained its former productive capacity. To this circumstance must be added as an invaluable advantage to Danish agriculture the comparatively quiet labour conditions prevailing in this industry. This is a consequence of a feature which is typical of the social structure characterizing Danish agriculture, *i.e.*, the fact that work on the farms is undertaken to a considerable degree by the farmers' own children, whose term of service is very often only a link in the chain of their education, and one that prepares them for taking over their farms in due course. This is an invaluable advantage which lends Danish agriculture a stability and firmness in production, unmatched in any other industry.

Denmark has become famous for the uniformity and purity in the quality of its main lines of production—butter, bacon, eggs and in recent years cheese. The successful development of its agriculture has also tended to prevent that migration from the rural districts to the towns. The following figures bear striking testimony to this :—

The population of Denmark in 1921 was 3,267,831, of which 1,859,965 lived in the rural districts. This shows an increase of 145,578 over the previous five years, and of 209,615 in the ten years 1911–1921. The men and women about balance in the rural districts.

Hygiene of the Nation Affected.

Diseases that used to be very prevalent have disappeared, others are much reduced in their virulence. A striking instance is that of the Island of Lolland. At one time it was, owing to its low-lying character, subject to very serious floodings by the sea, leaving the soil very damp and boggy. This affected cultivation and produced also very unhealthy conditions, so much so that Marsh Fever (known over all Denmark as the Lolland fever), bronchitis and similar illnesses, were very prevalent. These conditions continued until 1903, since when reclamation, drainage and afforestation schemes carried out on a big scale have resulted in modification of practically all these illnesses, and Marsh Fever has been eliminated. The soil is now one of the richest in Denmark.

Tuberculosis or English Sickness.

In a recent report by the Danish National Society for fighting Tuberculosis, satisfaction is expressed at the considerable decrease in the number of cases of tuberculosis in Denmark during the last generation, and Professor Faber, in submitting the report, said the tuberculosis mortality figures were now the lowest on record—50% less than those of 30 years ago—and were second only to those of Scotland, and he gave it as his view that in a few years Scotland would be beaten. One of the Directors of the Society—Dr. Ostenfield—in speaking of the report, stated that 80% of the patients in the sanatoria for which they were responsible had been discharged during the year with positive results. The report states that a deficit of 1,293,474 Kroner made on the Sanatoria during the year was met by the State.

It has been said that women have not the "inventor's" mind, yet daily the number of women who invent useful household implements or labour-saving devices grows apace. In the offices of the International Institute of Inventors in Sackville Street, are housed many ingenious little and big things which are the outcome of woman's thought and brain, points out the *Pall Mall Gazette*. Here, for instance, are some square saucepans. There have been square kettles, baking tins, but never square saucepans before. These will soon be on the market in their thousands, and are sure to oust the round variety. In 4 square saucepans over one gas jet a dinner can be comfortably cooked with a minimum of expenditure. One side there is a handle, but either of the other three sides act as a lip from which to pour. A great advance on the lipless round sort. The inventor is Mrs. Holt, of Bolton, a little Lancashire woman with an inventive brain—and a business-like one, too, for the authorities at the Institute prophesy that she will make a goodly fortune with her square saucepans.

Bacteria which Benefit Agriculture.*

By The Director of Agriculture, Madras.

It is not generally understood how many natural processes and fermentations are dependent on the presence of bacteria, and, further than that, the fact that certain kinds of bacteria do certain work which is not done by others. I therefore propose in this report to deal with some of those which more closely concern the agriculturist.

Even at the present day in this country it is by no means generally realized, firstly that such objects as bacteria exist at all, secondly that granting their existence, they are of many kinds and shapes and sizes, and thirdly that the work they accomplish is dependent on the type of bacteria performing it and that one type will not perform the work of another. I particularly wish to emphasize again the existence of these minute organisms and their enormous economic importance.

Some people seem to find extreme difficulty in grasping the fact that although large families, or what are technically known as 'colonies', of bacteria can be easily seen by the naked eye, when grown or cultivated under special conditions, individuals can only be demonstrated by the use of advanced scientific technique. In other words, it is quite impossible to pick up a handful of soil and demonstrate to the ryot the bacteria running about and working in it.

They are not worms or insects, both of which belong to an infinitely higher and more organized branch of nature.

Difficulty of seeing Bacteria.

This initial difficulty being recognized it is at once a question—how are bacteria to be recognized and demonstrated to the general public? For the scientist his training and knowledge make this question a fairly easy one, but for the untrained person recognition and demonstration have to depend on the effects produced as the result of the presence of bacteria and the reverse, that these effects are not produced in the absence of bacteria.

It might be considered an easy matter to arrange demonstrations whereby people might be shown these tiny creatures through the scientific instrument known as a microscope; students are of course shown in this way after they have had considerable training in the use of apparatus. This method is not, however, generally applicable because a microscope is an exceedingly delicate instrument—very costly—and must be handled with extreme care as it is easily, irreparably damaged. It is possible to demonstrate bacteria by means of lantern slides, but again comes the difficulty of explaining that what is being shown to the naked eye in this way is thousands of times larger than the actual thing itself. In spite of all this, however, the fact remains that bacteria are of the most tremendous economic importance.

They are directly responsible for many human, animal and plant diseases, and they are essential factors in many industries such as the manufacture of lactic acid, vinegar, in tanning, sewage treatment, and dairying.

Bacteria and Soil Fertility.

It is, however, the question of soil fertility which is of vital importance to the ryot and therefore the effect on this of the presence of bacteria and different kinds of bacteria is the point which most closely concerns him.

It was pointed out in the first report of this series that the numbers and kind of bacteria were of the greatest importance with regard to soil fertility.

In that report the main activities of beneficial soil bacteria were also dealt with and how these were encouraged to multiply and how the growth of harmful bacteria was to be eliminated as far as possible.

It is now proposed to go into a little more detail and explain the actual methods in use in bacteriological soil analysis and show how this may be regarded as an index of soil fertility.

First of all it is possible to estimate numbers of bacteria in a definite quantity of soil and the effects of varying conditions on these numbers can be ascertained.

For example the application of farmyard manure and green manure which is known to every one to be beneficial, result in an appreciable increase in the number of micro-organisms in the soil allowing for those actually added in the manure. If soil is subjected to prolonged drying the numbers of bacteria fall considerably but an increase at once follows subsequent moistening, and this again shows a connexion between plant growth and soil

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* Part of Digest No. 10, Department of Agriculture, Madras.

bacterial content. In fact the moisture content of the soil and the soil temperature can both be correlated with the numbers of micro-organisms present. In addition, the crop and the system of cropping have been shown to exert a direct influence upon the numbers of the bacterial population.

Earlier in this report it was stated that one method of recognizing the presence of bacteria was by the effect they produced. Some of these effects are increased oxidation in the soil and nitrate production and these together with crop yield can all be correlated with bacterial numbers.

Now, it was stated in the first report that the ryot knew that by bad cultivation good land can become poor and now we begin to see some of the reasons for this.

Benefit of Lime.

It has been shown that in land receiving ammonium sulphate as a manure and no lime that the crop yield was practically nil and the number of micro-organisms extraordinarily low. As soon as lime is added, the acidity, or soil sourness which was produced as the result of the manuring with ammonium sulphate alone, is reduced and both crops and bacterial numbers increase immediately.

With land which received no mineral or nitrogenous fertilizer continuous cropping so exhausts it that crop yields become negligible and at the same time the numbers of micro-organisms are extremely low.

Therefore, although the ryot may know that liming of acid soils results in increased crop he probably does not know that it also results in an enormous stimulation of the development of micro-organic life. If however he had applied to a bacteriologist for assistance the latter could at once have told him that liming was necessary for sour soils because otherwise the bacterial population would be too low in numbers to help in making the soil fertile.

Manure also has a similar stimulating effect. It is of course possible instead of estimating actual numbers of bacteria to make measurements of the actual chemical activities of the bacteria as stated above. These activities are dependent on the numbers of bacteria present and therefore can be correlated with soil fertility.

Japan as a Cotton Manufacture.

In a series of articles appearing in the Journal of the British Chamber of Commerce at Shanghai, an interesting survey is given of the post-war status and prospectus of the cotton culture, industry, and trade in the principal producer, manufacturer, and consumer countries of the world. Among other things it is worthy of mention that, according to the data supplied, Japan has come to hold the first place among the secondary cotton manufacturing countries in the amount of cotton consumed, and has attained third rank among all cotton manufacturing nations, although she is still far behind both the United States and the United Kingdom.

Under the present night-and-day operation of the cotton mills each cotton spindle in Japan is about equal in working hours to between two and three Western spindles. This renders the present number of spindles in Japan equivalent roughly to nearly 10,000,000 Western spindles. Moreover, owing to the predominance of ring spinning and the lower average count of the yarn produced in Japan, the consumption of cotton per spindle is greater, hour for hour, than in most other countries. When judged, therefore, by the annual consumption of cotton, the place of Japan in comparison with other countries differs from its place when equipment alone is considered.

Prior to the war, Japan held sixth place in point of annual consumption of cotton, being exceeded in that respect among the group of secondary manufacturing nations by Germany, British India and Russia. Germany and Russia have lost heavily in spindleage, both by neglect and actual destruction during the war, and by the post-war transfer of Alsace-Lorraine to France and the creation of an independent Poland and Finland.

A project for a Paper Mill which promises well is situated in West Khandesh, north of Bombay, in the neighbourhood of Tapti River. A Bombay Financial group is interested in the scheme, but beyond the fact that it is proposed to utilize grasses it is impossible to extract any information. It is known, however, that the Bombay Forest Department is in sympathy with the proposal; also that a definite application for a concession has been made to the Government of Bombay.

Rubber in India, 1922.

By The Director of Statistics, India, Calcutta.

Rubber is grown mainly in Southern India and Burma. The statistics dealt with in a recent publication issued by the Director of Statistics in India are, it is stated, based on data furnished by rubber planters, and relate to the area and production of rubber, with special reference to the number and extent of plantations, the daily average number of persons employed and the stock of dry rubber held on the 31st December 1922.

The number of plantations in the year under review was 1,078, covering an area of 189,914 acres, as against 1,016 with an area of 196,990 acres in the preceding year. New lands planted with rubber in the estates during the year 1922, so far reported, amounted to 6,308 acres, and the area of old cultivation abandoned to 2,833 acres, showing a net increase of 3,475 acres over the total area 123,983 acres (revised) in 1921. The total area under rubber in the year under report was thus 127,458 acres, which is 3 per cent above the area of the previous year, of which only 61,086 acres were tapped. Of the total area under cultivation, 48 per cent was in Burma, 32 per cent in Travancore, 8 per cent in Madras, 7 per cent in Cochin, 2 per cent each in Assam and Coorg, and one per cent in Mysore.

The total production of raw rubber during the year is reported to be 11,820,286 lbs., (Hevea 11,802,866 lbs., Ceara 1,120 lbs., and Ficus elastica 16,300 lbs.), as against 9,056,430 lbs. (Hevea 8,995,780 lbs., Ceara 47,520 lbs., and Ficus elastica 13,130 lbs.) a year ago. The yield per acre of tapped area was 209 (93) lbs. in Cochin, 208 (170) lbs. in Travancore, 194 (199) lbs. in Burma, 160 (54) lbs. in Madras, 100 (29) lbs. in Coorg, and 32 (53) lbs in Mysore, the figures for 1921 being showing in brackets. There was a general increase in production in the year under review, especially in Madras, Coorg and Cochin.

The daily average number of persons employed in the plantations during 1922 was returned at 30,356, of which 25,955 were permanently employed and 4,401 temporarily employed, as compared with 29,404 (25,772 permanent and 3,632 temporary) in the preceding year.

The total stock of dry rubber held on the 31st December 1922, was estimated at 3,650,005 lbs., (Hevea 3,618,665 lbs., Ceara 15,040 lbs., and Ficus elastica 16,300 lbs.) as against 3,115,079 lbs., (Hevea 3,098,000 lbs., Ceara 11,520 lbs. and Ficus elastica 5,559 lbs.) reported on the corresponding date of 1921.

The export of rubber by sea from British India to foreign countries during 1922-23, amounted to 12 million lbs., showing an increase of 13 per cent as compared with the previous year. The United Kingdom absorbed 53 per cent, Ceylon 24 per cent, the Straits Settlements 12 per cent and the United States of America 9 per cent of the total exports. Madras accounted for nearly 56 per cent and Burma 44 per cent of the total trade.

Co-operative Societies in Sind.

The Hon'ble Mr. Ghulam Husein Hidayatullah, the Minster for Local Self-Government, recently met the co-operative workers of Hyderabad in an informal conference at the Office of the District Co-operative Bank. Rai Bahadur Diwan Pritamdas outlined the activities of the Hyderabad Co-operative Institute, adding that the number of members was on the increase but to infuse more life into the Co-operative movement, it was necessary to employ a paid man on a monthly salary of Rs. 100 to look after the "Co-operator", the organ of the Co-operative Institute. Touching the affairs of Hyderabad District Co-operative Bank, he said though the Bank had been in existence for 18 months only, its Capital Fund had risen to Rs. 25 thousand, while the deposits had exceeded a lakh of rupees. Some of the promised capital had not flowed in but this was perhaps due to the fact that the Bank was started after the harvest season. Khan B. hadur Azim Khan accounted for the Zamindars' inability to subscribe further capital, but assured the gathering that more capital would be coming in shortly. Rai Bahadur Diwan Pritamdas then drew the attention of the Minister to the affairs of the Hyderabadi Amil Co-operative Bank and the Housing Association, and he was joined by Mr. Gopaldas Jhamatmal, the President of the Hyderabad Municipality, in pressing that something should be done to relieve the growing congestion in the city. At the conclusion, the Hon'ble Mr. Hidayatullah promised that he would do all in his power to promote the interests of the various Co-operative Institutions.

Indian Sugar Committee.

The following Order No. 1119, Development dated 6th August 1923 has been issued by the Madras Government :—

The Director of Agriculture and the Director of Industries were asked to report on the recommendations of the Indian Sugar Committee in Chapters X and XV to XVIII of their report. Their reports have now been received.

In regard to the extension of sugarcane cultivation, orders have already been issued in G.O. No. 1244, Development, dated 18th September 1922, and an investigation into areas in the Agency tracts and elsewhere which may appear to be available and suitable for the cultivation of cane and for the installation of sugar factories, is in progress. In this connection, the Government are of opinion that special attention should be paid to the Godavari Delta, particularly the Ramachandrapuram taluk of the Godavari District and to the Ganjam and Vizagapatam Districts. The Director of Agriculture is requested to report what steps can be taken, whether by intensive propaganda work or in other directions, to promote the cultivation of cane in these areas. The main obstacle in the Ramachandrapuram Taluk appears to be not defective drainage but the inadequacy of the water-supply between the months of December and March. The Public Works Department will therefore be requested to investigate this question and to report what action, if any, can be taken to effect improvements in this respect.

The Government Sugarcane Expert will also be requested to investigate the possibility of evolving new strains of cane suitable to the local conditions of this area.

The Sugar Committee's recommendations in regard to the opening of cane research stations have already been considered and the Government of India have been furnished with the views of the Madras Government. The Government are of opinion that Circle farms in Ganjam and South Kanara are not required at present. A proposal to establish a station near Anakapalle for the study of problems connected with cane cultivation is under consideration. The consideration of the desirability of opening a station for breeding thick canes at a central place like Chittoor will be deferred until the decision of the Government of India on the recommendations of the Committee in paragraph 392 of their report has been received.

The Government are of opinion that work on cane on a smaller scale should also be carried out on the Agricultural farms at Samalkota, Palur and Taliparamba and the Director of Agriculture is requested to report the lines he would propose for the conduct of such work.

The Government do not consider that any specific orders are called for on the recommendations of the Committee in Chapter XV of their report as they are satisfied that the Agricultural Department is doing all that lies in its power to promote the adoption of improved agricultural methods.

In regard to recommendations of the Committee in Chapter XVI of their report, "Other Sources of Sugar" the Government are inclined to agree with the Committee and the Director of Industries that the difficulty of securing tappers presents an almost insuperable obstacle to the arrest of the decline in the palmyra jaggery industry. They are not, however, satisfied that the possibilities of developing the cocoanut jaggery industry have been fully explored. In these circumstances and in view of the recent heavy increase in the duty on imported sugar, the question whether cocoanut jaggery cannot be utilized as a source of supply for sugar manufacture appears to deserve investigation, but it is not to be expected that the manufacture of sugar from this source will be undertaken by private enterprise unless it is shown that there is a reasonable prospect of its proving remunerative. The Government therefore consider it desirable that the Director of Agriculture, the Government Agricultural Chemist and the Director of Industries should confer and report on the commercial possibilities of cocoanut jaggery with special reference to the cost of production, data in regard to which should be in the possession of the Agricultural Chemist.

As in the case of the recommendations of the Committee in Chapter XV of the report, the Government do not consider that any specific orders are called for in regard to the recommendations in Chapter XVIII. The Agricultural Department is doing all it can to promote the introduction of improved furnaces and of power crushing and the Director of Agriculture is requested to report fully on the progress made in these directions in his forthcoming administration report.

Economics in the West.

German Currency—New Standards of Value.

London, September 22, 1923.—Paper currency is one of the conveniences of modern monetary machinery. Paper money, however, divorced from some more stable standard of value, very soon becomes an inconvenience, and, unless severely held in check, a positive evil, until finally it renders ineffective the whole mechanism of exchange in money terms. Such is the lesson of all modern monetary history, its final warning being clear from the events of the last few years in Russia, Austria, and Germany, to mention only three outstanding examples.

The case of Germany is peculiarly interesting in that it presents the spectacle of a highly industrialized country struggling with an uncontrollable flood of paper money. The events leading up to this state of affairs are well-known but upto the present little attention has been paid in current discussion to the measures adopted to overcome its adverse effects on business transactions of all kinds.

One of the results of inflation carried to the lengths reached in Germany is that the various uses to which money is ordinarily put are to some extent separated and performed by various quite distinct emergency monetary instruments. The first stage reached is the practical abandonment of the inflated currency as a medium of exchange in foreign trade. Thus for some time past scarcely any trade has been conducted with German importers and exporters on a mark basis. Internally, however, the use of the depreciated currency in exchange may continue for a much longer period, only coming to an end through the inefficiency of the monetary unit as a standard of value. As a medium of internal exchange pure and simple—if it were possible to segregate this form the other services commonly associated with the medium of exchange—paper currency, even though issued in enormous quantities, could circulate for almost any length of time. When the bulk of paper required for executing a small transaction becomes inconveniently large it is possible, by legislative enactment, to reduce 1000 units of old currency to 1 of new and, as in Russia, to begin again the whole process of inflation. Thus paper marks are still the principal medium of exchange in Germany, and the use of exotic currencies is only resorted to as a result of the mark's ineffectiveness as a standard of value.

One of the first problems arising out of the function which money is intended to perform as a standard of value is involved in the use of that standard as a unit of account. It is clear that a balance sheet containing items, some of long standing, some of short, dating from all stages in the process of inflation, is absolutely fictitious. Paid-up capital, for example, bears no relation capable of demonstration in the ordinary balance sheet to an item such as stock-in-trade. Hence the practice is arising among numerous German firms of drawing up a balance sheet for internal use if not for public exhibition in terms of gold marks, to which denomination each item is reduced in accordance, as nearly as possible, with its actual value to the concern.

But the most important problem arises directly from the performance of money's function as a standard of value and of deferred payments. There are now probably nearly 60 millions of millionaires in Germany, most of whom have arrived at that stage not through spending a pfennig out of every mark earned but through reducing every mark to the value of a pfennig. As a fact the process has been carried very much further, until over 45,000 of the present paper marks are now equivalent to the pre-war pfennig. Hence savings have been rendered practically worthless and no one who is entitled to an income of any kind can be certain of the real value of the money to be received. The most unfortunate are those entitled to a fixed money income. Those receiving money incomes which vary with the general level of prices are more or less unfortunate according to the elasticity with which their rates of pay are adjusted to the price level, the frequency with which payments of earnings are made, and the rapidity which the money received can be expended in goods, either for immediate consumption or for storage, or on the acquisition of assets having a relatively stable value. This latter alternative, which has been adopted as one means of overcoming the difficulties of a depreciating standard, took the form very largely of investments in real estate and in fairly stable foreign currencies, such as a dollar of sterling bills. Necessarily such a process must of itself send up the price of the assets concerned even above the levels to which inflation alone would raise them. Undoubtedly this has been one of the

factors leading to the heavy under-valuation of the mark in terms of foreign currencies and to the strenuous efforts made to suppress the endeavours of private persons to acquire foreign exchange sorely needed for purposes of international trade.

The phenomena mentioned are merely two expedients employed widely by private persons for evading the unpleasant consequences of thrift undertaken in terms of a depreciating currency. Apart from individuals, however, central and local governments and corporate bodies of all kinds have been driven to various devices for borrowing on such terms as to assure investors of a stable return in respect of interest and a final repayment of the equivalent in real values of the original loan.

The most obvious plan for attracting such investments was the issue of loans in terms of gold marks or of some relatively stable foreign currency. Hence the Reich dollar loan and the sterling loan recently issued by the Port of Hamburg. Similar in their operation are the various issues in terms of commodities. While the details vary from case to case the general principle holds that subscriptions are made according to the prices or exchange rates ruling on the date of subscription for the particular commodity or currency upon which the issue is based, while interest payments and redemptions are contracted for likewise according to the prices or rates ruling on the dates allotted for payments. Thus the investor is assured of a real income, capable of fairly exact calculation, and of the return of a sum of money equivalent in terms of commodities to that originally subscribed. On the other hand, the borrower is given the advantage of being able to spread his receipts, by means of calls, over a period convenient for the carrying out of the purposes in view. In some cases, instead of a regular interest payment, provision is made for redemption of the loan at its maturity at a premium in terms of the commodity chosen over the price of issue.

This type of loan has been contracted widely by companies and public authorities. Thus the Prussian potash loans have been most successful, so far as success consists in raising the required sums from investors. The rye loan of the City of Berlin was also heavily over-subscribed. The State of Saxony has used the same commodity as the basis of a loan. Coal, lignite, sugar, potash, timber and rye, as well as dollars, sterling and gold marks, have all been used by companies at various times. Usually when a company is engaged in the early stages of production its own particular product is taken as the basis for the issue. Incidentally some companies have gone so far as to fix the fees of their directors in terms of pig iron or some other commodity produced by them. It should be noted, however, that the denomination of loans or salaries in terms of commodities is very far removed from a reversion to the truck system of actual payment in those commodities.

The contraction of private loans, such as mortgages, on a similar plan, has proceeded to an advanced stage. Thus in East Prussia arrangements were made to grant loans to farmers on a rye basis, this commodity being chosen on account of its importance in the German diet and the fact that it is grown in large quantities all over the country. In this particular case the provincial authorities issue mortgages to the value of a certain quantity of rye, with interest stated in similar terms. The holder must then find a person willing to lend on the security of this mortgage, or, alternatively, the authorities will sell the mortgage, handing over the proceeds to the mortgagor. This practice of contracting public and private loans in terms of stable value has spread so widely that special institutions have sprung up with the specific object of managing such issues, and, in some cases, of taking deposits and making advances in stable values. The principle upon which such institutions are based appears to be similar to that of the investment trust, the profit arising from the difference between the rates earned on investments made and those paid on sums borrowed.

The substantial investor has therefore received a good deal of attention in connection with the difficulties incidental to rapid currency depreciation. At the same time the small saver has not by any means been overlooked. The principle of deposits in stable value has been adopted on a wide scale by savings banks, their investments being made on similar terms. But perhaps the most interesting of recent experiments is the foundation in certain large enterprises of savings banks for their workers, to accept deposits in terms of working hours. The central idea of the scheme is that the employee notifies the wages department in advance of payday of his desire to "save" a certain number of working hours. He is then paid at the current wage rate only for the difference between the total hours worked and the number he has notified his intention of "saving". A

record is kept of the credits thus accumulated, in terms of hours, and should the worker desire to withdraw a certain sum, he is paid, after the required notice, for the number of hours to be withdrawn at the rate of pay then ruling. In this manner thrift is encouraged by the knowledge that the savings set aside are not reduced by the depreciation of the mark's value in terms of commodities—an assurance that holds good as long as the inevitable lag between the price levels and the wage adjustments to cope therewith does not widen. Thus the system has great advantages from the employee's point of view, assuming that an adequate reserve is kept to render his deposits readily withdrawable in cash. Incidentally it is perhaps surprising that under conditions of a reduced standard of living, which inflation invariably brings in its train, there should be a margin between real wages and subsistence consumption wide enough to permit saving by workers on any large scale. So far as this margin exists, however, such facilities make saving a practicable proposition where previously it was a futility.

On the other hand, the scheme places upon the firms concerned a responsibility which they may find difficult to bear. The non-payment of wages due, and the possibility that payment may be called for at any time at short notice, mean that certain investments must be made which, while retaining their real value, must be fairly liquid in character. If the sums so reserved were used by a firm as additional working capital, a business depression following a stabilization of currency and price levels, and the possibility of deflation might place it in such a frozen condition as regards its assets, that repayment, if possible at all, could be made only with considerable difficulty. The consequent pressure on the employing concern would be still greater where the sums reserved were invested outside the business in non-liquid assets such as land or mortgages. Further, inasmuch as no interest is paid on savings of this character, it is quite likely that a stabilization of the currency would be followed by very heavy demands for withdrawals for the purpose of transferring the credits to ordinary savings banks. At the same time stabilization or deflation, so far as it involved business depression, would result in dismissals which would necessarily be accompanied by heavier withdrawals from the hours-saving fund than would be made under the reverse conditions. So that for more than a single reason the position of the employing firms must be rendered extraordinarily difficult by the re-establishment of monetary stability. Even apart from these special difficulties, the incursion of manufacturing firms into the highly technical business of savings banking is liable to prove a very costly experiment in a field for which they have had little or no suitable training by experience.

All these devices for solving the many problems arising out of a rapidly depreciating currency are of interest for their own sake, as showing the ingenuity of a highly developed economic community in facing the obstacles connected with the conduct of the operations essential to its national welfare; but they are perhaps of still greater value as showing the dangers involved in the process of currency inflation. This process, so easily embarked upon, but so difficult to halt once it is fairly started, has attractions of its own; but its inevitable consequences in the impoverishment of the greater part of the community, resulting in discontent with frequently bursts into open revolt against existing conditions, demonstrate, if nothing else, the need for the utmost caution in the use of so dangerous a weapon for any purpose, economic or political.

New Capital Issues in U. S. A.

The demand for new capital in the United States continues on a large scale. According to the *New York Commercial and Financial Chronicle* the nominal amount of new capital offered for subscription during the first half of this year was 2,472 million dollars which, while somewhat less than for the corresponding period of last year, is in excess of the figure for any other half year since the war. It is of interest to note that the issues for industrial undertakings have been unprecedentedly large and that, as compared with the early months of 1922, borrowings by foreign governments and Canadian municipalities have appreciably declined. The total new foreign borrowings in the first half of this year have slightly exceeded £30 millions and for the twelve months to June last have been about £50 millions, as against £50 millions and nearly £90 millions offered in Great Britain in the corresponding periods. When comparing these figures it should be remembered that, whereas issues floated in the London market are for the most part held for permanent investment, foreign securities placed in New York are not frequently sold within a comparatively short space of time to investors on this side. The recent Austrian loan is a case in point.

Canadian Trade and Finance.

Revision of the Bank Act.

Montreal, 1st September, 1923.—The decennial revision of the Canadian Bank Act took place at the recent session of Parliament. Certain amendments to the Act were proposed by the Minister of Finance, and, following the usual practice, there was a full discussion of these amendments and the principles underlying the Act generally by the Committee of the House on Banking and Commerce. Evidence was taken of leading bankers, economists and others regarding the Act and proposed amendments. The consensus of opinion seemed to be that the present system of banking in Canada meets adequately the requirements of the country, and the bill as finally passed contains no amendments of major importance. In future, borrowers must register with the Assistant Receiver-General of the province in which they do business, notice of their intention to borrow under Section 88 of the Act, and such registration must be renewed every three years. Statements are required to be submitted by companies controlled by a bank, and "non-current" debts are defined for the purposes of monthly and annual statements. The number of auditors to be appointed by the shareholders annually is fixed at two, one of whom, after serving for two years, shall not be eligible to serve for a further period of two years. Furthermore, the shareholders' auditors are required to report important information to the Directors of the Bank direct.

Foreign Trade.

During the first four or five months of the year Canada normally experiences an unfavourable balance of trade. Soon after the opening of navigation, however, the export graph rises above that of imports as a consequence partly of decreased buying abroad and partly as a result of the release of Canadian products which have been held up during the closed navigation period. Last year the balance turned in our favour in May, but this year, not until June.

A survey of the figures representing the foreign trade of the Dominion during the first half of 1923 discloses the fact that a marked improvement has been under way. The aggregate of imports and exports for the period amounted to more than $886,500,000, an increase of approximately 30 per cent over the figures for the same period last year. Total exports were valued at $424,185,553 in comparison with $325,935,677 for the first half of 1922. It is interesting to examine the trade situation with a view to ascertaining what countries enlarged their dealings with Canada. A noticeable expansion will be found to have taken place, particularly with the United Kingdom, United States, France, Sweden and Argentina. During the twelve months ending with March, our exports to the United Kingdom increased from $299,000,000 in 1922 to $379,000,000 this year; with the United States the increase was from $292,500,000 to $369,000,000; with France from $8,200,000 to $14,100,000; with Argentina from $3,200,000 to $4,400,000.

A significant feature which the above figures disclose, relative to our international trade relations, is the substantial increase which took place in intra-imperial trade. The noticeable expansion which occurred in our exports to Great Britain is shown above. Our shipments to Australia last year were valued at $18,783,766 in comparison with $10,678,600 during the previous year. With New Zealand our export trade more than doubled in the period specified; the figures were $4,128,531 and $8,286,262 respectively. Our exports to South Africa, moreover, increased from $3.89 millions to $5.583 millions. Taking the British Empire as a whole the exports increased from $345,835,410 to $439,625,892, an increase of 27 per cent. These figures are interesting in the light of a statement recently published by Barclay's Bank, Limited from which the following is an extract:—

"Great Britain can supply in increased quantities the rolling stock, irrigation machinery, or agricultural implements needed for the development of the wide spaces of the Empire. In return, this country can effectively import in greater volume the foodstuffs and raw materials produced. The possibilities of expansion in this direction are increased by our obligations to America, for, as was recently pointed out by the Chairman of this Bank, the effect of the Fordney Tariff must be to compel us to seek new sources of supply of foodstuffs and raw materials. The difficulty of discharging our debt by the direct export of manufactured goods to America is obviosuly increased by the tariff. The natural solution would be to increase our exports to the Dominions in return for which, merchandise which

America cannot produce for herself would be available for shipment, and would supply the exchange needed for debt payments."

Mis-Use of Public Credit.

An analysis of the progress which Canada has made since the close of the world war gives rise to certain well-founded misgivings with regard to a vitally important phase of our economic development, namely, the borrowing and spending of our municipal, civic and provincial governments.

Not infrequently, the public press makes favourable comment upon the ease with which provincial governments, municipalities and cities obtain funds in foreign markets. No one would, for a moment, dispute the advantage of high credit standing, yet there is another side of the question and less consideration generally is given to this aspect, namely, to the danger which such ease in borrowing may involve. Speaking generally, one of the quickest methods of bringing an individual to financial ruin is by allowing him credit beyond that which he is warranted in having. A municipality or even a province is not fundamentally different from an individual in this respect, ample evidence of which is provided by a glance over Canadian experience. Our railroad history probably furnishes the most obvious examples. The availability of unlimited credit for the construction of a mileage adequate to the needs of a population far in excess of that of the Dominion, produced consequences which are too well-known to require comment. In precisely the same manner, if, possibly, to a lesser degree, many of our municipalities and cities have been able to borrow far beyond their legitimate requirements, and have undertaken much too ambitious projects. As a consequence, present prosperity is seriously interfered with by excessive taxation for the service of the debts, and, in at least a few cases, Canadian towns and cities have been forced into a state of bankruptcy.

In the adjustment of her public accounts and debts, Canada could, with great advantage, look to the example set by Great Britain. Rather than allowing the debt to go on accumulating year after year, the administration has undertaken a policy of most rigid economy. Under the Geddes Committee civil service expenditure was reduced in many directions, and every effort was put forth to eliminate unnecessary costs, the personnel of many departments being reduced in the process. As a result of their policy of retrenchment the Government has been able, during the late fiscal year, to apply £100,000,000 to the reduction of the permanent debt and has been able to make certain important reductions in taxation, and this, notwithstanding adverse business conditions and almost unprecedented unemployment. The situation in Canada is found to be very different. The debts both of the Dominion Government and also of smaller governing bodies have tended distinctly upward rather than downward. The total gross debt of the Dominion Government stood at approximately $1,863,336,000 on March 31, 1918. A year later it had increased to $2,460,183,000 on July 31, 1922 it stood at $2,975,372,000. Turning to the finances of the provincial governments, one finds that the debts have, without exception, increased very substantially as indicated in the following table :—

Funded Debts of the Provinces.

	1919	1923
British Columbia	$23,071,936	$78,086,311
Alberta	31,500,200	67,537,986
Saskatchewan	31,420,903	52,772,777
Manitoba	33,890,870	66,331,121
Ontario	66,772,338	224,693,420
Quebec	39,706,613	55,604,926
New Brunswick	17,163,089	26,651,432
Nova Scotia	16,990,000	24,605,913
P. E. I.	773,000	900,268

From the above it will be noted that the outstanding debt of the Province of Ontario has increased from $66,700,000 in 1919 to approximately $225,000,000 at the present time. The "per capita" expenditure in the interval rose from $7.50 to $12.07. With most of the other provinces the situation is very similar. It must be understood that it is not our intention to suggest that the extent of the culpability of the individual provinces is indicated by the proportional increase in the debts. It is obviously impossible in an article of this character to analyse the purposes for which such borrowings were used—a necessary procedure if a true picture of the situation is to be given,—nevertheless, the figures plainly indicate the general tendency.

When we turn to the question of municipal expenditure, we find that the situation differs only in degree as will be seen from a study of the following table showing the funded debts of the leading Canadian cities in 1919 and 1923.

FUNDED DEBTS OF THE CITIES.

	1919	1923
Montreal	$112,392,119	$124,328,069
Toronto	90,164,549	136,422,250
Winnipeg	28,129,554	30,465,186
Vancouver	29,062,858	29,049,206
Quebec	14,975,647	15,783,268
Ottawa	13,375,098	19,747,930
Hamilton	11,913,317	16,003,078
Calgary	16,114,152	18,737,184
Edmonton	21,281,724	30,082,471
St. John	4,968,826	7,375,355

The fundamental need at present is a policy of rigid economy in expenditures. The general public are probably as much at fault as the governing bodies concerned. Governments labour under the severe handicap of being obliged to depend upon public good-will and therefore often hesitate to cut down services or benefits which are enjoyed by their constituencies. Such services incidentally have been greatly augmented during the last half dozen years, until at present the annual expenses of conducting the Dominion and Provincial Governments average approximately $53.90 per capita. The voter is sometimes inclined to attribute to a government the ability to create money, overlooking the fact that whatever money is spent unnecessarily, represents a direct loss to each individual. It is essential, therefore, that the public realize the urgent need for economy before a government can effectively bring about such economy.

An encouraging feature of the situation is the indication that at least some sections of the country are awakening to the seriousness of the problems involved. At a recent meeting of the Union of Quebec Municipalities for example, it was intimated by the Premier of the Province that the Government intended shortly to place the control of municipalities under a new department, the head of which would devote his entire time and attention to the regulation of municipal borrowing and spending. The leader of the New Ontario Government recently announced the intention to appoint an eminent financier as comptroller of the province to regulate and restrict borrowing and expenditure. In the Province of Alberta, moreover, a Public Utilities Commission has been appointed to oversee the administration of municipal finances. These projects along with similar policies in certain of the other provinces indicate a growing realization of the need for action in view of the enormous increase in the burden of public indebtedness and in the rate of public and municipal taxation.

Expenditure naturally increases as the population increases, and as the country develops, and our war debt has, of course, greatly added to the burden. We are convinced, however, that the spending in many cases has involved, and still involves, a large element of waste. The result is a continuous increase in the tax rate of the country, and, as a consequence, an appreciable rise in price levels. This is undoubtedly one of the factors in the problem of depopulation with which the country is faced, and it is no exaggeration to say that the whole problem is one of the most serious with which the country must cope.

Heat Rays for Medicinal Purposes.

Some months ago, comment was made in these columns upon the unique German industry centered in the quartz-lamp factory at Hanau, where a lamp capable of giving artificial mountain sunlight has been successfully manufactured for some years. The lamp produces ultra-violet rays, and their use has now become common to the medical profession in many countries. But the Hanau works of the Sollux Verlag have other developments to show. It has been proved that heat rays may be successfully used for medicinal purposes, and the firm has for some time been producing a lamp, the use of which makes possible the therapeutic application of luminous heat rays (heliothermy). There are distinct differences in the way in which the two kinds of rays are applied. At the beginning of the treatment with artificial mountain sun, a patient may not be subjected to the irradiation for more than three to fifteen minutes at a time. With the luminous heat rays, however, the period may be extended to at least one hour. Good reports of this treatment have been received from many parts of the world, and the matter is one which should be of interest to doctors and dentists everywhere. Further details may be obtained from Dr. Oeken's booklet on "The Application of Luminous Heat Rays in Otology", and from the Sollux Verlag, Hanau, Postfach 875.

Notes from America.

Laboratory Lightning.

The lightning flash of two million volts a force greater than the total electric power used by the United States, recently turned loose upon a miniature village constructed upon the floor of the laboratory, was not only a spectacular manifestation of man's power over electrical energy, but one of a series of valuable experiments dealing with high voltage.

While the experiments are intended primarily to reveal facts concerning some of the problems of high tension transmission, and to give the experimenters information as to how to nullify and prevent the destructive effects of natural lightning, it is quite possible that their most valuable contribution will consist in throwing light on the transformation of one element into another. Just what becomes of that portion of wood which vanishes when struck by lightning is not yet known. It is surmised that it takes the form of a gas of some sort. Charles Steinmetz, the noted electrical "wizard" is at present wondering whether tungsten, struck by lightning, can be transformed into helium gas. Investigations in this direction may, he believes, show that the natural processes which take place in producing some of the earth's most valuable products, such as coal, can be shortened by the application of a tremendous force for a short period, and thus place great reservoirs of resources within the control of man. This, he admits, is pure speculation on his part, but as he states it, "in artificial lightning we have a magnificent tool to work with."

The laboratory in which the two million volt lightning flash was released is a huge brick room completely lined with steel. The spectators all of whom were told that they witnessed the experiment at their peril, stood on a steel platform halfway between floor and ceiling. All openings were closed by movable steel shutters—to safeguard the plant and persons outside the room. Then the lights were switched off. Three great transformers wound, with 100 miles of wire and grounding in a tank containing 40,000 gallons of oil, were used to "step up" a current of 2,000 volts, one thousand times. Then, with millions of horse power being discharged in less than a millionth of a second, came a blinding explosion amid terrific noise.

The arc was made to strike where desired, by the use of lightning rods. The miniature village, completely equipped with such rods, survived bolt after bolt. Finally it was decided to save it for further tests with lightning conductors, and blocks of wood were destroyed in its stead.

Annual Waste in Sickness.

Sickness costs the United States $900,000,000 a year in lost wages and the total loss from preventable diseases and deaths is close to $3,000,000,000, reports the National Health Council.

The 180,000 people who are sick in New York daily costs that community $54,000,000 a year. But infant mortality, the most flagrant of all wastes, is comparatively low in New York. It is seventy-five, whereas that of Pittsburgh is ninety-six. The lowest infant mortality rate is forty-nine, for Seattle.

Thirty Firms Incorporate to Trade with Russia.

Expansion of American trade through a Russian outlet and an opportunity to visualize to the world the absorptive value of the Russian market, are seen in a trade agreement, involving not less than $2,400,000 annually in exports and imports, which has been closed with the Russian Government largely through the instrumentality of the President and Foreign Manager of the American Tool Works of Cincinnati, writes the *Christian Science Monitor*.

The arrangement, according to the contracting parties, while more or less a "test" may lead to a definite answer to the question of Russian good faith. The contract is signed by the foreign trade monopoly department of the Russian Government and the Allied American Corporation, which comprises more than thirty large American firms. Every dollar of Russian trade with the corporation will be backed by Russian gold, the American contracting parties assert.

"The contract means that the avenue to Russian trade, heretofore thought to be almost inaccessible, has been opened," according to the President of the American Tool Torks. "Those who have entered into this contract have the utmost confidence in the faith of the Russian pledges.

"When it is considered that firms such as the Ford Motor Company, the United States Rubber Company, the American Tool Works and thirty other like corporations, after

exhaustive study of conditions, have entered into such an agreement, it looks as though the promise is thoroughly genuine."

The former President of the Autolite Company of Toledo and machine shop production expert, has been chosen as the corporation's expert in the machinery department. He is expected to devote a great deal of study to the system of machine shops and machinery in Russia in an effort to make all improvements possible.

RIVERS TOO "STEP LIVELY" IN UNITED STATES.

It is not only the inhabitants of the United States who live at a high rate of speed, rushing breathlessly from one thing to another, dashing to the tops of their skyscrapers in soaring elevators, plunging into and out of comet-like subway trains, and running their motor cars at sixty miles an hour along the highways. Nature herself seems to be in a hurry in America. There is the Red River for instance, which has been working at such a pace that it has caused a long and complicated boundary line suit between the States of Oklahoma and Texas.

At the trial of this case, unique in the amount of scientific evidence submitted, bearing on the habits of rivers, and of the Red River in particular, twenty-eight experts testified that, from their investigations it appeared that the Red River had, within less than a hundred years, built up valley lands by a process of island building, working at such a high rate of speed that the valleys in the upper reaches of the river had been completely reworked and rebuilt in this short space of time.

The boundary suit resulting from the river's haste was one of the most expensive and difficult ever recorded in interstate disputes, and it was only by calling in a corps of scientists that the law was able to catch up with the too-speedy Red River.

The Danish Brick Trade.

Last year's output and sale of Danish bricks forms the subject of a report published in the "Statistiske Efterretninger". From this it appears that in the whole kingdom there were 270 brick factories operating all through the year and four other works which had no production to record, whereas in 1921 there were no fewer than 30 concerns idle. Thus, in spite of the big lockout in the course of last year, there was a marked increase in the sale and output of bricks. This does not apply, however, to Northern Jutland, while in Southern Jutland, Lolland and Falster, German competition is complained of. The number of workmen employed in the 270 concerns in operation was about 6,000, of whom 300 were women and 70 boys. In the preceding year about 4,200 workers were employed.

The production of bricks in the last three years appears from the following figures (000 omitted):

	1920	1921	1922
Hand-made masonry bricks	27,779	19,518	37,746
Machine-made tiles	45,872	32,757	58,870
Machine-made bricks	201,713	159,612	256,234
Ordinary roof-tiles	8,472	5,769	7,880
Glazed tiles	6,889	4,380	7,245
Earth Bricks	23,850	26,659	10,581
Ornamental tiles	3,151	3,313	3,987
Others	6.546	5,733	6,013

The entire value of the amount disposed of, representing practically the whole quantity turned out, save in the case of earth bricks, came to 22.6 million kroner, the average value per 1000 being 60 kroner for hand-made masonry bricks, 53 for machine-made tiles, 45 for machine-made bricks, 149 for ordinary roof-tiles, 197 for glazed tiles, and 94 for earth bricks.

A comparison between home-production and import is shown as follows:—

	1920		1921		1922	
	Output	Import	Output	Import	Output	Import
Ordinary Masonry bricks	275·4	11·2	211·9	11·8	352·8	13·3
Roof-tiles ...	15·3	1·0	11·1	0·8	15·1	0·8
Unglazed earth bricks ...	23·9	0·9	26·7	2·0	10·6	1·0

A Scheme is afoot for the erection of a paper mill at Cuttack, a town on the Bengal-Nagpur Railway, about 230 miles south-west of Calcutta. The raw material will come from the immense bamboo forests in the Angul district, about 70 miles away, and it is estimated that at least 70,000 tons, and perhaps 100,000 tons, can be made available per annum at a cost, delivered at mill, of £1 per ton exclusive of royalty. A detailed scheme is being prepared by Mr. Raitt, Paper Expert to the Government of India.

Indian Cotton Committee.

The first meeting of the Sixth Session of the Indian Central Cotton Committee held on September 5, at Bombay, recorded sympathy with the Japanese nation for the recent disaster and proceeded to the discussion of the regulation of gins and presses to deal with abuses which for many years have spoiled the reputation of Indian cotton, caused an economic loss to the country, and a loss of profits to the cotton grower. The following resolutions were passed :—

(A) That the Government of India be asked to undertake legislation on lines of the draft Bill submitted by the Committee for the regulation of gins and presses and for the compulsory making of bales, the maintenance of records of ownership, and periodical statistical returns.

(B) The All-India Act should also include a specific provision to ensure :

(1) That only standard weights and correct scales shall be used in all ginning and pressing factories.

(2) The adequate paving or flooring of press houses.

(3) That in all new ginning factories separate entrances for kapas and exist for ginned cottons should be provided and that the plans of all new factories should be passed by the local authority.

(C) The All-India Act should also include an enabling clause empowering the local Governments to introduce a system of the licensing of ginning and pressing factories. This clause should only be operative if brought into effect by a notification approved by the resolution of the Provincial Legislative Council.

(D) Rules under the Act should be made by the Government of India for the following matters : (*a*) The allotment of marks to pressing factories ; (*b*) Prescribing the manner in which the bale should be marked ; (*c*) Prescribing the method of publication of statistical returns. All other rules should be made by the local Government concerned.

The next subject discussed was the question of open cotton markets. The following resolutions were passed :—

That the Central Cotton Committee considers that open cotton markets on the Berar System should be introduced wherever possible throughout the major cotton growing tracts, except where special local conditions render this undesirable or unnecessary for the present.

That the local Governments should be recommended to undertake the necessary provincial legislation.

That for the satisfactory working it is desirable that the Market Committee should include a direct representative of the cotton growers not less in number than half of the total.

In the course of the discussion was shown that while there were certain portions of cotton growing tracts where the regulated markets might prove to be temporarily impracticable there were many areas where greater facilities for the cultivators to market their kapas were badly needed. It was shown that the Berar markets had been a distinct success. The principal amendment to the Berar-rules proposed was that providing for adequate representation of the cotton growers on the Market Committees. After the discussion of certain details connected with the Punjab Research Scheme the Committee decided to undertake the necessary preliminary experimental work in connection with the fumigation of imported cotton to prevent the introduction of the American boll weevil into India. The following resolutions were also passed :—

(1) That the Committee expresses the appreciation of the action of the Empire Cotton Growing Corporation in forming an Indian Sub-Committee and of the attention which the Sub-Committee has given to the questions which they referred to it for consideration.

(2) That the Committee will be glad to co-operate with the Corporation and its Indian Sub-Committee to fullest extent possible in promoting the better marketing of Indian cotton in Great Britain, but will await the further recommendations of the Corporation's Indian Sub-Committee in regard to the details.

The Committee also passed a resolution regarding their appreciation of the action of the Government of Bombay in notifying Surat, Navsari and other areas under cotton transport, and recommending the notifying of a further area in North Broach to complete the protection of the staple cotton growing areas of the Presidency. The Committee then adjourned until the next day.

Lord Morley at the India Office.

'The five years that I passed as head of the India Office,' writes Lord Morley in his 'Recollections,' 'marked an arduous moment in what is, and must remain, the most delicate of imperial problems. Accidents of time and circumstances had made questions that were always of standing difficulty suddenly importunate..... Of deeper moment loomed the vision of a wave of political unrest from various causes, partly superficial, partly fundamental, slowly sweeping over India. Revolutionary voices, some moderate, others extreme, grew articulate and shrill, and claims or aspirations for extending the share of peoples in their own government took more organized shape. At the same moment, as it happened, an election in England had for the time given overwhelming power in the House of Commons to the political party that was least likely to quarrel with abstract catchwords in the rising Indian movement. This coincidence between the uneasy stir there, and the ascendancy here of parliamentary groups all agreeing strongly in a general temper of reform, constituted a serious element in the situation at Simla and Whitehall alike.' 'The ingenious saying, that British rulers of India with a supreme Parliament at home are like men bound to make their watches keep time in two longitudes at once, was now to be sharply tested.'

Writing in 1906 to Lord Minto, Lord Morley said: 'I am the least of a sportsman that ever was born, and the sight of a tiger except behind the bars of the zoological gardens, would frighten me out of my wits; but I do rejoice to think that you, who I sincerely believe, are the most heavily burdened public servant in the Empire, are seeing the fresh life of the jungle, the leading zamindars, and all the rest that you so very pleasantly describe. What would I not give now, if I had only accepted an invitation from Lytton in 1877 and 1878 to visit him in India! What would I not give for three days with you now.'

The Congress.

Writing again to Lord Minto, Lord Morley said: 'He (the present King-Emperor) talked of the National Congress as rapidly becoming a great power. As it happened, I had a short preliminary talk with Mr. Gokhale the day before (I shall have more by and by). My own impressions formed long ago, and confirmed since I came to this office, is that it will mainly depend upon ourselves whether the Congress is a power for good or for evil. There it is, whether we like it or not. Probably there are many questionable people connected with the Congress. So there are in most great popular movements of the sort. All the more reason why we should not play their game by harshness, stiffness, and the like.'

On Gokhale.

'Yesterday I had my fifth and final talk with Gokhale.....He has a politician's head; appreciates executive responsibility; has an eye for the tactics of practical commonsense. He made no secret of his ultimate hope and design—India to be on the footing of a self-governing colony.'

The Moderates.

'I have, for my sins, read more in my time than my fair share of the doings of revolutionary parties in France; I was much in with Gambetta, Clemenceau, etc., after the smash of the Empire, and the battle for the Republic. Again, I saw Irish 'rebel' action at close quarters, and for some three years I saw them with the eyes of official responsibility. Moderates are always at a disadvantage. The same forces that begin the move, continue their propulsive power. The only question is whether by doing what we can in the Moderate direction, we can draw the teeth of the Extremists.'

What does it Matter?

'I wish that I had thought of an Irish word that Walter Scott discovered in some visit to Ireland, and constantly used afterwards in his letters when trivial disagreeables came in his way. 'Nabochlish' which is old Irish for new French 'N'importe'. When I hear or read some malicious or injurious word in politics, I find real comfort in saying to myself 'Nabochlish'! with convinced emphasis. What does it matter? Why need I care? It won't alter the facts. Time will prove. Wait. The facts are what justifies—facts and time.'

Repressive Measures.

'The former proposal to pass a general press law to be put in force exclusively on the initiative of the military authorities, was, I should guess, about as stiff a dose as ever was preferred to a British Minister within a hundred years. But this notion of turning a private meeting into a public one almost

beats it! And the notion of giving the lieutenant-governor or any other authority the right of forbidding a speaker whose views he dislikes to open his mouth in a given area!'

ON THE INDIA OFFICE AND HIS PEERAGE.

It was on one afternoon at this time that Asquith came to my official room at the House of Commons and told me that he understood the King, then at Biarritz, would send for him to kiss hands as the new head of the Government. 'Yes, of course,' I said, 'there could be no thought of anything else, that is quite certain.' He would like to know if I had any views for myself. 'I am engaged' I said, 'on an extremely important and interesting piece of work. As you know, my heart is much in it, and I should be sorry to break off. So, if you approve I will stay at the India Office, and go to the House of Lords.' 'Why on earth should you go there?' 'Because though my eye is not dim nor my natural force abated, I have had a pretty industrious life, and I shall do my work all the better for the comparative leisure of the other place.'

ON MEN ON THE SPOT.

And as for the G. of India (Government of India) being the best judges of the right way of meeting difficulties in India, is it quite clear that Asquith, Grey, Loreburn, and even the S. S. are less competent hands than such queer paragons as certain of your Council, etc.? Is it certain that we are so ignorant of racial hatreds and all the other conditions of Oriental Communities? And after all, have these good men been so successful in knowing and understanding all about Indian life and character, that we must take their word for gospel? It is not you nor I who are responsible for 'unrest', but the over-confident and over-worked Tchinovniks who have had India in their hands for fifty years past.'

ON HARSH SENTENCES.

'The sentences on the two Tuticorin, Tinnevelly men are wholly indefensible—one gets transportation for life, the other for ten years. 'The learned judge was in no doubt as to the criminality of the two men.' This may have been all right, but such sentences! They cannot stand. I cannot on any terms whatever consent to defend such monstrous things. I do therefore urgently solicit your attention to these wrongs and follies. We must keep order, but 'excess' of severity is not the path of order. On the contrary, it is the path to the bomb.'

RETIREMENT.

'In November, 1910, I resigned my post at the India Office, partly because I was tired, partly from a feeling that a new Viceroy would have fairer openings with a new Secretary of State; partly, too, that I might have a farewell chance of literary self-collection. Of the last little came, and perhaps it was not really so strong an impulse as I flattered myself that it would prove. Be that as it may, the Prime Minister pressed me to remain in his Cabinet, either as Lord President of the Council or Privy Seal, and I went to the Privy Council.'

Punjab Government Development Loan.

A "Punjab Government Gazette Extraordinary" issued on August 11, 1923 published the objects and the conditions of the development loan of the Government of the Punjab. This loan which is described as "6¼ per cent ten year bonds 1933" will be known briefly as the Punjab Bonds 1933 and the issue is limited to approximately rupees one crore, the whole of which will be devoted to the Sutlej valley canals project and other productive canal projects in the Punjab. The bonds will be issued at par and will bear interest at the rate of 6¼ per cent, one anna in the rupee, payable half-yearly on the 16th October and the 16th April and will be repaid in full at par on the 16th October, 1933. Under the rules framed under the Government of India Act the loan will be secured on the whole of the revenues allocated to the Government of the Punjab. The bonds can be purchased from the 1st September 1923 to 15th October 1923, both days inclusive, on application and on the payment of the amount due at any branch of the Imperial Bank of India located in the Punjab and at any Government Treasury or Sub-Treasury in the Punjab, provided that the Government may without notice close the issue on an earlier date than the 15th October, should the total amount of the bonds already purchased approximate to the total issue of one crore. This is believed to be the first loan that the Punjab Government has floated inside the province and the proposed canal projects will prove of the greatest value in the development of the province.

Empire's Forestry Problems.*

By Lord Lovat.

The proceedings and findings of the Empire Forestry Conference, which is to assemble at Ottawa on the 25th July, at the invitation of the Government of the Dominion of Canada, cannot fail to command the widespread interest of the foresters and forest lovers of the Empire.

At this Conference not only technical forestry subjects will be debated —some of which have already been considered at the 1920 Forestry Conference in London —but also matters of immediate concern to the general public will come up for discussion, of which the more important are :—

(*a*) The World's soft-wood timber supplies.

(*b*) The Empire's timber resources and trade within the Empire.

TECHNICAL SUBJECTS.

It is not necessary here to go in detail into the questions of interest which will be brought up in connection with technical forestry.

Forestry policy, sylvicultural methods, including the establishment of forests by natural and artificial means, forest protection, including fire control and pests, etc., reaserch, education, the relation of the forest authority to the State and other kindred matters will be dealt with by recognized experts detailed by the Canadian Forest Authorities.

Many of the sylvicultural problems will be discussed from what one might call the new world (virgin forest) as opposed to the European (artificial plantation) point of view, and as such will be of absorbing interest to Empire foresters at home and abroad.

THE WORLD'S SOFT-WOOD SUPPLIES.

In your 'land of Goshen' it may be difficult for the general public to appreciate the anxiety of countries less fortunately situated than Canada on the question of the World's softwood supplies. The British Isles, Australia, South Africa, North Africa and many of the non-self-governing Colonies have to depend in whole or in part for their soft-wood timber supplies on foreign countries about which there is often insufficient information except that which is of an 'ex-parte' kind. The rise and fall of foreign exchanges, the closing of countries to commerce (*e.g.*, Russia), strikes, trade combines, rise in freights, etc., may at any time alter prices to an extent which—without creating a timber famine—may temporarily cause a serious rise in the cost of living restrict building operations and even adversely affect general trade.

The case of the British Isles is a case in point, and the following facts may be of interest :

Great Britain to-day produces only seven per cent of her timber requirements.

In 1914, Great Britain imported £40,000,000

A Message from the Prince of Wales.

"AS President of the Empire Forestry Association I send a message of good wishes to the delegates taking part in the Empire Forestry Conference, I shall watch the results of their labours with great interest.

"Their task will be to provide accurate information of our forest resoures, to foster trade conservation throughout the Empire. By such means alone can we ensure that our present resources are used to the best advantage, and our supply of timber maintained for the future. It will be the earnest endeavour of the Empire Forestry Association to create and support a well-informed public opinion upon which the success of this policy must largely depend. Of our affiliated societies, the most important and successful is the Canadian Forestry Association, whose 13,000 members I congratulate upon a fine record of patriotic work. The forests of Canada are a priceless heritage, and the Association is rendering great public service by fostering widespread interest in them. May it grow and prosper.

"I hope the Conference will have far-reaching results, and that one of these will be a greatly increased support of the Empire Forestry Association, whose work I commend to every patriotic citizen."

EDWARD, Prince.

*Part of Letter addressed to "Illustrated Canadian Forest and Outdoors."

worth of ligneous material (including sawn and hewn lumber, paper and pulp).

By 1920, the total imports were considerably diminished, but when normal trade conditions are resumed it is probable that the average imports of wood and wood material will run from £50-70,000,000 per annum.

In the Great War a competent authority has estimated that the British Isles were denuded of two-thirds of their accessible mature soft-wood timber, yet notwithstanding this sacrifice, even during the period of acute anxiety over food supply, at no time—during which statistics were available—did the amount of shipping set apart for the import of timber not exceed the amount of shipping assigned for the import of grain.

It is small wonder that under such circumstances Great Britain and other countries which depend mainly on the Northern European timber supplies are anxious to look further afield and seize every opportunity for studying how the position stands in the great continent of America and how far the reports from 1912 and 1920 from the United States and the statements made by the Dominion representatives at the 1920 Forestry Conference as well as later reports on fire damage, budworm moth, etc., are borne out by subsequent investigations.

At the request of Mr. Finlayson of the Forestry Branch of the Department of Interior, the Forestry staff of Great Britain have been working out and grouping together the latest available statistics on the soft-wood supplies of Northern Europe. When these are collated with similar information which Mr. Finlayson is obtaining from Canada and from our fellow-foresters of the United States it should be possible to present a picture, blurred no doubt by inaccuracies and with an outline dimmed by varied and numerous reservations, still a picture which should show in stronger relief than has been the case in the past, both the world's assets in accessible and marketable standing timber and where these resources are situated.

The presentation of these world figures should mark a definite epoch in forest history.

It is necessary, however, to sound one note of warning. The subject is so vast, the governing factors which effect supply, demand, increment and availability are so complicated that not only deductions from data but the very data itself must be considered with caution. Panic statements on timber scarcity or timber famine are to be deprecated, just in the same way that undue optimism based on present-day population, per capita consumption, methods of extraction, facilities, wages, etc., are to be deplored.

Without wishing to be didactic I would submit that it should be the duty of those who are appointed by the Conference to marshal facts and figures, to concentrate on producing a true picture of things as they are or seem to be rather than to branch off into those all too facile fields of speculation as to what conclusions can be drawn from the data that is to hand.

That the Empire Forestry Conference will be able to state anything final on these great problems is not to be expected. That they can materially advance the world's general knowledge can be predicted with confidence.

Trade within the Empire.

The possibilities of trade within the Empire is a subject which our critics will no doubt say 'fools will rush in where even (market) bears fear to tread.' Facts, however, are compelling. Exports and imports from and to various parts of the Empire are enormous and run in some years in the region of one thousand million dollars. Canada alone exports forest products worth $225,000,000 a year (average for five years). In the largest importing country (Great Britain) only 15 per cent of the wood products come from inside the Empire; speaking proportionally some at least of the African figures are scarcely less noteworthy. While return freights, established relations, proximity, etc., have a retentive power which it is dangerous to underestimate; the possibilities of Empire trade development are so great that the subject cries for investigation.

My personal belief is that if the timber trade representatives sent from S. Africa, Australia, Great Britain and the Dependencies are as capable and painstaking in their work as the foresters of 1920 were in theirs, that the case for closer trade relations in the timber trade of the Empire will be thoroughly thrashed out and reasoned and valuable suggestions brought forward for official consideration.

In this connection it should be noted that the Canadian Empire Forestry Conference is both fortunate and unfortunate in its date of meeting. Unfortunate in so far as the representation of certain Nations will undoubtedly be reduced on account of depleted exchequers, fortunate in so far as it immediately precedes one of the most important Empire Conferences that has ever been held—the

Premiers' Conference on Trade within the Empire.

EMPIRE TIMBER RESOURCES.

The Empire resources in hard-woods is a question of absorbing interest and no doubt those responsible for the organization of the Conference will give an opportunity for the Nations of the tropical and semi-tropical zones to state their case.

At the 1920 Conference it was agreed that after Canada the next Empire Conference should be held in a hard-wood country (India, a Commonwealth or a Dominion) and that 'inter alia' the possibilities of adoption of the lesser-known hard-woods for more general uses should be one of the subjects which should receive special attention.

SOFT-WOOD RESOURCES.

On the subject of soft-wood supplies we shall no doubt hear of the natural resources of Newfoundland, New Zealand, India and New Guinea, and of the efforts which are being made in Australia, South Africa, Great Britain, etc., to establish soft-wood plantations. It is on Canada, the great soft-wood reserve of the Empire, that the attention of the Conference will be concentrated.

It is not necessary to dwell on the educational value and interest that it will be to the foresters of the Empire to be taken round, under expert guidance, to the great forests of Quebec, Eastern Canada, British Columbia and the Western Seaboard.

Abolition of Mysore Supari Cess.

The following G. O. No. L. 7989-8019/--A. & E. 121-22-4, dated 12th June 1923 has been issued by the Government of Mysore :—

The abolition of Supari Cess has been repeatedly urged in the Representative Assembly for the past several years. During the discussion at the October Session of the Representative Assembly in 1922, it was brought to the notice of the Government that there was no necessity for the levy of the cess and that the interest realized by the investment of the amount at the credit of the Supari Cess Fund would be sufficient to meet the charges of further investigations connected with the Koleroga in the future.

2. The Director of Agriculture was consulted with a view to ascertain whether the amount required for making experiments in regard to Koleroga, etc., could not be met from the annual interest on the accumulated sum of the Supari Cess Fund at its credit in the Government Treasuries, and he is of opinion that the interest realized by the investment of the amount at the credit of the Supari Cess Fund would be just sufficient to cover the expenses of Koleroga work, provided that the Government is prepared to consider this sum as a net budget charge and allow the department to work on a budget allotment of about Rs. 30,000, about Rs. 18,000 of which, will be locked up for about a year in the purchase of sprayers and spraying materials for sale to garden owners.

3. The Comptroller states that the balance of the credit of the Supari Cess Fund at the end of October 1922 was Rs. 1,71,579 and that if it is invested permanently it would fetch an annual income of about Rs. 10,000 according to the present market rate of interest which is 6 per cent.

4. Although the total sum realized throughout the whole State under Supari Cess is about Rs. 27,000, Government consider that there is much force in the representation that the Supari Cess as a separate cess should be abolished, and the Department of Agriculture whose duty it is in the course of its ordinary work to help the supari growers with advice and the necessary remedies against causes that interfere with supari cultivation should do all that is needful in this direction without the levy of an additional tax. Government are therefore pleased to direct that the Supari Cess be abolished with effect from the official year 1923-24.

5. The amount now at the credit of the Supari Cess Fund will be invested and all expenditure towards supari investigations be debited to the interest realized on the Fund for the present.

A Bill will shortly be laid before the French Parliament for the tarring and anti-dust treatment of 4,357 miles of national roads, and also of a large length of roads of minor importance. The total cost of the improvement is expected to amount to $20,000,000 and the work will take eight years to conclude.

Books in Brief.

Factory Labour in India.

By R. K. Das, M.A., M.Sc., Ph.D., Lecturer in Economics, New York University. Published by Walter De Grutyer & Co., Berlin, W. 10, Genthneir Stratse, 38. Price 6 *sh.*

This is about the first book of an independent student of Economics on "Factory Labour in India". It is both comprehensive and critical. Mr. Das has done his work with scholarly care. Though he disavows offering "remedies", yet his final chapter (XI) headed "Problems and Conclusions" is well worth attention for the suggestions he puts forward. The book deserves note at the hands of all people interested in the progress and well-being of factory labour in this country. Those interested in the Indian Labour movement cannot do worse than invest a few rupees on this handy and suggestive book.

Hindustani Workers on the Pacific Coast.

By R. K. Das, M.A., M.Sc., Ph.D., Lecturer in Economics, New York University, and Formerly Special Agent, Department of Labour, U. S. Government. Price 4 *sh.* Published by Walter De Grutyer & Co., Berlin, W. 10, Genthneir Stratse, 38.

Mr. Das has discharged, in our opinion, a public duty in producing this book after a close study *in situ* of the Indian labourers on the Pacific Coast of America. The prejudice against them has been so great that a systematic attempt was necessary to study them on the spot by a competent and interested student of Economics. Mr. Das has, after much painstaking labour, produced a book which is worthy of the interest he has taken in the subject. The Bureau of Labour Statistics, United States Department of Labour, has helped him in prosecuting his work. Though his connection with the Bureau restricted the scope of his study to the collection of industrial statistics rather than the interpretation of social facts, still Mr. Das has achieved something useful in this line as well. We would draw special attention of readers to Chap XI. of this book entitled "Principal Problems" in which a succinct summary is given of the position of Indians in America, the disabilities, and the prejudices under which they suffer. He analyses the causes carefully and offers his conclusions in a few brief words. He suggests that being "very small" in strength it would be to the advantage of India and America, that prejudice and determination against them should cease. This would pave the way, he thinks, to the establishment of friendly relationship between the two countries and this, in its turn, to commercial and cultural exchange between them. Mr. Das' study is excellently conceived and the moderation with which he writes ought to enable it to go far both in India and America.

Wage Changes in Various Countries, 1914 to 1922.

Studies and Reports of the International Labour Office — Series D, No. 10. Geneva. June 1923. Price 2 *sh.*

This is a continuation of the study contained in Series D, No. 2. It includes European countries and non-European countries and in an appendix India and Italy are dealt with. The data for each country cannot be considered as wholly typical and represent only what was available. The Prefatory Note refers to this and other points, which should be remembered in drawing conclusions from the Statistics issued.

The September number of the quarterly Journal "Maternity and Child Welfare in India" contains the announcement of a forthcoming Indian National Baby Week which, it is hoped, may do much to arouse public interest in this important subject. There are, in addition, three papers by correspondents in England and America, three papers by correspondents in India and a number of smaller contributions. This publication is recommended to all who are interested in Child Welfare.

Topics in the Journals.

(1) The Asiatic Review. July 1923.—(a) Commercial Prospectus of Burma Woods by A. L. Howard. (b) The Newspaper Press of India by E. Cotes. (c) The Future of Indian Land Revenue by Sir P. J. Fagan.

(2) The Mysore University Magazine, July 1923.—A visit to Australian Universities by H. J. Bhabha, M.A.

The Mysore Economic Journal

A Monthly Periodical devoted to the Discussion
of all Economic Topics of Interest

Vol. IX DECEMBER 1923 No. 12

The Mysore Economic Journal.

By The Editor.

With this issue of the "Journal" we will have completed the ninth year of our existence. During this period we have tried to present the economic progress of Mysore State and generally of India, and incidentally of Western countries as well. In doing this, it has been our aim to point to our countrymen, what makes for progress in this country in the economic field. The development of a country depends upon its people, their physical well-being and their education, and their material and moral ideals, and aspirations. The development of the people is, therefore, as much a matter for anxious thought as also of the country. In this campaign of development, the people come first and the country next. If they can march *pari passu*, it would be a great point gained. In the nine years which have elapsed, we have again and again stressed this point and in doing so, we have pointed to the methods adopted in foreign countries for achieving these ends, and remarked that strenuous attempts should be made in this country to adapt, as far as may be, these methods for realizing our ideals. To this point we will recur again and again in the years to come, for we think there is much that we can learn from the progressive countries of the West in this matter. This "Journal" was started in 1915 when the Great War was still on. During the past nine years it has seen much progress both in this State and in India. In the Mysore State, the work of Economic Development has been recognized as part of the every-day work of not only the State as such but also of the local-governing bodies. The Economic Conference, to which this "Journal" owed its origin, has been recognized as a body with a definite function to discharge and has accordingly been given a place in the new Reform Scheme inaugurated not long ago in the State. Since 1915, we have had, despite the prevailing financial stringency, silent progress in development work as well. In the years to come, with the disappearance of the trade slump, it is certain that progress in this work will be more marked. With the cheap power facilities provided, the people of the State ought to be able to do more for themselves. The development of education and the turning of the attention of pupils to the engineering and mechanical arts will doubtless help the country in the coming years. The demand for trained men will be keener than ever a few years hence than now and the conditions of progress are such that any number of them will be absorbed in the trades and industries that will be called into being in the near future. The State itself has pioneered in the Iron industry, and it behoves people to be up and doing in other lines,—for instance, Paper. This "Journal" has from time to time published a great deal of information on Paper and its production in Mysore—and in India and in foreign countries generally—and it seems a pity that none in this State should be able to take up its manufacture. There is hardly any doubt that if a suitable Joint Stock concern came forward to undertake its manufacture from the raw products available for it in the Mysore State, the Government would be only too glad to help them in every possible way to enable them to achieve their ends. Mr. Banerji, the present Dewan of Mysore, has been a pioneer in this particular matter. He suggested, over a decade ago, the manufacture of paper in Cochin while he was Dewan there. It is a venture full of promise and it would be a matter for congratulation if the enterprize attracted the attention of right people in the State.

This "Journal" has invited the attention of its readers to many minor industries, arts and crafts. These are by no means negligible,

They are, most of them, industries of a kind which can best thrive now, since Protection is in the air. Tariffs have come to stay. Even England, whose creed has been Free Trade, is turning Protectionist. If people in this country now let slip their opportunities, it will be long before they can get them again.

The "Journal" enters on its tenth year in January next in the full confidence that it will be allowed to continue to serve the State and its people as hitherto. The support given to it in the past has been encouraging but it can easily be better. The success of a "Journal" of this nature depends entirely on what people interested in industries, trade and commerce make of it. The scope of the Journal has been broadened and is indeed such that it will appeal to a larger clientele than ever before in the coming year, both in His Highness' territories and outside, as heretofore.

Bengal Silk Committee.

A Resolution of the Government of Bengal in the Department of Agriculture and Industries states :—For some time past the Hon'ble Minister-in-charge has had the question of the reconstitution of the existing Bengal Silk Committee under his consideration. The subject was placed before the Conference of the Sericultural Department held in Calcutta in March, 1922, and it was agreed that the Committee should be reconstituted on a more popular and representative basis so as to secure the representation of the silk trade, both European and Indian, and the cocoon rearers and silk reelers, on that body. It has now been decided that the Committee will consist of the following members :—

Official Members.

The Director of Agriculture, Bengal, (*President ex-officio*).

The Deputy Director of Sericulture, Bengal (*Secretary*).

The Registrar of Co-operative Societies, Bengal.

Mr. G. S. Dutt, I.C.S., Collector of Bankura.

Non-official Members.

Mr. J. Goodman of Messrs. Anderson Wright & Co., Calcutta, and in his absence from India Mr. I. A. Clark of the same firm.

Mr. J. DeMinvielle, Manager, Rose Filature Concern, Plassey, Nadia.

Maulvi Shaik Harun Rashid Beldanga, Murshidabad.

Babu Asutosh Chaudhuri, Zamindar, Malda.

Maulvi Abdul Ghani, Malda.

Babu Anath Bandhu Mandal, Mirjapur Silk Factory, Kajla, Rajshahi.

Khan Bahadur Maulvi Emaduddin Ahmad, M.L.C., Rajshahi.

Khan Bahadur Maulvi Hafizar Rahman Chaudhuri, M.L.C., Bogra.

Rai Abinas Chandra Banerjee Bahadur, M.L.C., Birbhum.

Babu Nabendranath Basak, Dacca.

Rai Seshadhar Ghose Bahadur, Mymensingh.

The non-official members will hold office for a period of three years.

The duties of the Committee will be mainly advisory; they will advise Government on matters referred to them by the President.

There will ordinarily be two meetings of the Committee in a year which will be held on such dates and at such places as the President may decide. The President is also empowered to convene special meetings when he considers it necessary to do so, in the interest of the work of the Committee. To all meetings the President may, with the previous sanction of Government, invite as visitors other officials and non-officials whose presence may help the discussion of any particular question.

The Director of Agriculture will preside at all Committee meetings and in his absence the Deputy Director of Sericulture will take his place. In the event of both being absent, the members will elect their own chairman. Each member will have one vote and in case there is an equality of votes the President will have a casting vote. At all meetings four members of the Committee will form a quorum.

The Committee will have power to refer any matter to a sub-committee, whose report will be laid before the next ordinary meeting of the Committee for consideration.

Government reserve the right to alter the constitution of the Committee and these rules.

Tariffs and Protection in Canada.

By C. Howard, President of the Canadian Manufacturers' Association, Montreal.

[In view of the interest taken in Tariffs in India and England just now, the following address made by Mr. Howard, President of the Canadian Manufacturers' Association, will be read with interest. He asks whether the country has become more prosperous as a result of Tariff Reductions made since the war. He points out that British Preference has not increased, as intended, the proportionate importation of British goods and asks for a higher General Tariff on which to base worth-while Preferences.—ED., M.E.J.]

At the last annual meeting of the Canadian Manufacturers' Association, a resolution was passed unanimously, urging that the Canadian Customs Tariff should be immediately and substantially increased on finished products and that, when higher rates of duty have been put into effect, Canada should endeavour to increase her export trade by making preferential tariff arrangements, based on the principle of bargaining, with other countries, particularly countries of the British Empire.

In the national interest, prompt action is absolutely necessary, along the lines of this resolution.

Canada has now one of the lowest customs tariffs in the world. Since the war, it has been repeatedly reduced, through popular appeals to prejudice and through misrepresentations which were not based on facts.

After the war, the destructive spirit, which was prevalent in most countries, in Canada took the form of a revival of the old agitation against the customs tariff. Individuals and organizations claiming to represent the farmers of Canada told them in the most violent and sensational language that the customs tariff was responsible for most of their troubles; that it was robbing them, and that the first step on the road to greater prosperity was a reduction in the tariff rates.

Tariff Four Times Reduced.

Others, posing as representatives of consumers, told them that the manufacturers, through the tariff, were taking a toll, thus increasing their living cost and generally oppressing them. Still others claimed that protection was retarding the development of Canada by taking the instruments of production and diminishing the national output.

Under the pressure of public opinion created by these statements, the Government made serious reductions in the tariff in 1919, and again in 1920.

If the charges against the policy of protection were sound, conditions should have immediately improved in Canada, following these tariff reductions. Farmers should have become more prosperous; consumers should have been better off; the country should have gone ahead.

Did these beneficial results follow the tariff reductions of 1919 and 1920? Did the farmers become more prosperous? Were the consumers better off? Did the country go ahead?

Exactly the reverse happened. Hard times began about the middle of 1920. The prices of farm products collapsed. The value of farm lands fell sharply. Business generally suffered. Thousands of people were unemployed. But consumers found that the reduction of prices did them no good, because their incomes had been also greatly reduced; and many of them were out of work and had no incomes at all. Business stability was disturbed; investors lost confidence and put their money into bonds instead of into productive enterprises.

Where is Prosperity?

It might have been supposed that these results would have proved a convincing lesson, but, unfortunately, the agitation had not spent itself. The old cries were continued against the tariff. Farmers and consumers generally were told that the remedy for bad times lay in more tariff reductions, and the new government yielded and made tariff reductions in 1922 and 1923.

Consequently, the country suffered two tariff reductions at the hands of the Conservative Government and two more at the hands of the Liberal Government. Both parties have been in competition in the matter of tariff reduction.

Where is the prosperity that was promised? Have the years coincident with the four tariff reductions been good years for the farmers? Have they been good years for the consumers? Is the population growing? Are the railways profitable? Are the banks improving their

standing and adding to their reserves? Has the country developed?

In addition to the reductions in the general customs tariff, the situation was aggravated by increases in the British preferential tariff, or, in other words, reductions in the Canadian rates on goods coming from the United Kingdom. These changes were particularly harmful to the Canadian woollen and knitted goods industry, as the increase in imports shows.

The British preferential tariff arrangement should be put on a new and more equitable basis, particularly as it has failed to accomplish the objects for which it was designed, *viz.*, to increase the percentage of our purchases from the United Kingdom; to increase the percentage of our sales to the United Kingdom and to decrease the percentage of our purchases from other countries.

Imports from Britain.

In 1896, when the British Preference was established, about 30% of the total imports of Canada came from the United Kingdom. Last year the percentage was 17.

In 1896, about 55% of all Canadian exports was sold to the United Kingdom. Last year the percentage was 40.

Those who framed the preference hoped that it would result in British goods replacing foreign goods, especially those made in the United States, but the reverse has occurred. In 1896, about 52% of our total imports came from the United States. Last year the percentage was 67.

That is, proportionately, we are buying more from the United States and less from the United Kingdom after 27 years of preference than before the preference came into existence.

Should Preference be Increased?

What is the remedy? Should we further increase the preference? That plan, as I have shown by a comparison of percentage, has not been effective.

Moreover, it would not only fail to attain its object but it would further injure Canadian industry. Putting the matter plainly, in many lines we cannot compete with the British manufacturers. Why?

The chief reason lies in the fact that wages are much higher in Canada, as the following statistics, compiled from the Canadian Labour Gazette, the British Labour Gazette and the National Industrial Conference Board's official bulletins, illustrate:—

	U. K.	Canada
	per week	
Paper and Pulp		
Average	$14.08	$24.17
Ship-building		
Average	$12.65	$21.00
Building Trades		
Plumbers	$18.50	$55.00
Plasters	18.15	55.00
Bricklayers	18.00	44.00
Carpenters	18.00	39.60
Labourers	13.25	20.00
Steel		
(*a*) Iron Moulders	$15.00	$35.00
(*b*) Labourers	10.50	18.00
(*c*) Machinists	14.50	28.00

Are we asking then that preferential tariffs be cancelled? No. The Canadian Manufacturers' Association, on various occasions, has recorded its adherence to the principle of preferential trade, especially among countries of the British Empire.

But the time has come when, in justice to this country, trade preferences should be arranged on the principle of bargaining.

That is, we should only give trade favours when we get equivalent trade favours in return.

Canada has already arranged preferences with the British West Indies, New Zealand, and South Africa, and is trying to arrange a preference with Australia, on this principle.

Unfortunately, however, the present tariff of Canada, owing to frequent reductions, is now so low that we cannot offer very much.

Increase in Tariff Needed.

The first step, therefore, should be a substantial increase in the general tariff. This would automatically increase all existing preferences given by Canada and would enable us to offer valuable new preferences in exchange for trade privileges.

We have been trying to arrange a preference with Australia for years, but I do not see how we can succeed unless we buy more goods direct from Australia, which can only be accomplished by giving Australia liberal preferences.

Unfortunately, a great many people in Canada do not realize clearly their relation to the customs tariff. They assume that the tariff is of benefit only to manufacturers and to those employed in factories.

Nothing could be further from the truth. Take the case of agriculture. How were the farmers affected by the tariff reductions since the war?

They were not hit first, it is true. The manufacturer suffered first. Then the factory employees were thrown out of work, or their wages were reduced. Food is the most essential item in the budget of the employees, and as the farmers produce the food, their turn came to suffer.

Official statistics place the number of those employed in factories at about 700,000. Add their dependents, and it is fair to estimate that about 2,500,000 are directly dependent on the salaries and wages earned in the factories of Canada.

Basing calculations on the average family budget compiled by the Department of Labour, we can form a reasonably accurate estimate of what the industrial population consumes in a year, taking only a few of the products on Canadian farms:

Meat	—	260 000 000 lbs.
Eggs	—	52,000 000 dozen.
Milk	—	39,000,000 gallons.
Bread	—	390,000,000 lbs.
Butter	—	78,000,000 lbs.
Potatoes	—	13,000,000 bushels.

When factory workers are out of employment, or on part time, or on reduced wages, they are forced to reduce their purchases, even of food, and the farmers' sales are proportionately reduced. If they leave the country, they are permanently lost as purchasers of farm products.

This illustration only points out one source of loss to the farmer. When factories slow down, railways lose freight, retailers lose trade, and nearly every form of business is affected. All the people engaged in these forms of business are, of course, consumers of farm products, and when their incomes shrink they must reduce their purchases from the farmers.

By subtracting the value of the farm products exported from the total value of the farm products, we find that, on the average, about 80% is consumed in Canada. Consequently, as the home market has been, and is still, the chief support of the Canadian farmer, the progress of manufacturing, which is the foundation stone on which urban life is built, is of vital importance to agriculture.

Again, a very large amount of farm produce is used in manufacturing. The canneries give one example; the flour millers another. A drop in factory production reduces their purchases of raw material from the farmers.

The home market is, likewise, vital to the manufacturer. Seven-eighths of our manufactures is consumed in Canada; one-eighth is exported. As half the population is agricultural, that half consumes a large proportion of what we make. If their sales are restricted, they must limit their purchases from us.

And so the circle goes.

What hits people of one occupation, hits all. They become prosperous or poor together.

These repeated reductions of the Customs tariff, striking us first, our workmen next, then the farmers and in turn all others, are increasing our burdens and preventing the development of this country.

Relations with United States.

Consider our trade relations with the United States as a result of the opposite tariff policies of the two countries. Take the constant adverse balance of trade. In 1913 we bought from the United States goods worth $441,000,000, and sold them only $167,000,000. Last year we bought from them $515,000,000 worth and sold them $304,000,000 worth.

Their new tariff is so high that it practically shuts out our farm products, our manufactures, and our fish. They take chiefly our raw materials, which they make into finished articles and re-sell in many cases to us, at greatly enhanced values, obtaining employment for their people and profit for their industries.

Yet we go on reducing our tariff and encouraging them to sell us manufactures, farm products and other things which we produce ourselves.

This one-sided arrangement cannot go on. Our stocks of raw material should be husbanded and not exploited. They should be advanced to the final stage of manufacture in Canada. True, there must be exceptions. We need certain of their products—they need certain of ours. But there should be a fair exchange. The present arrangement is too much in their favour.

In the United States, including Alaska and Hawaii, there are 314 ports of entry—to serve 110,000,000 people. In Canada there are 502 ports of entry serving 9,000,000 people. United States ports of entry are either on the boundaries or on navigable waters. The majority of ours are inland, facilitating the sale of foreign goods all through the country. Every bill of goods over $100 entering the United States must be accompanied by a consular certificate costing $2.50. We require no certificate.

The United States Customs regulations are designed to discourage and, as far as possible,

to prohibit importation of finished goods. Ours are designed to encourage them.

The United States does not have to use any efforts to attract immigrants. They are limiting immigration, picking and choosing the best, including those from Great Britain. Why? Because the United States has maintained the policy of protection for a hundred and thirty-four years. Parties rise and fall there; governments come and go; the tariff appears to be in their policies but is not really an issue because, while rates vary, the protective policy does not change. Consequently, capital and population went there, as iron goes to the magnet.

The United States is subjected to the same international influences as Canada and has to face similar problems in export trade.

The United States, however, after the war, followed the world tendency. They increased their tariff because they saw that practically all other industrial countries were increasing their tariffs, in order to retain their home markets.

There is not the slightest doubt that during the past four years, on the average, the United States has been more prosperous than Canada, and I think this is due, largely, to the fact that they pursued a sound tariff policy, while we did not.

Countries Raise Tariffs.

The Tariff Department of the Association recently compiled a statement showing that sixty-three countries have increased their tariffs since the war. Great Britain, the outstanding free-trader, has been increasing protective measures since the war. This month the woollen manufacturers demanded a protective tariff, and also the National Farmers' Union declared strongly for protection.

We took the opposite course; reduced our tariff four times and opened our markets to nations which had closed theirs to us.

Why did we start changing the national policy of protection which has been building up Canada since it was established in 1878?

The trade of Canada increased from $149,000,000 in 1879 to $1,747,000,000 in 1922.

In 1881 the capital invested in manufacturing was only $165,000,000. In 1920 it was $3,500,000,000.

In 1881 the value of manufactured products was only $309,000,000. In 1920 it was about $4,000,000,000.

In 1890 the total exports of Canada amounted to $85,000,000—only 6% of which was represented by manufactures. Last year our exports were valued at $945,000,000, of which about half was represented by manufactured and partly manufactured goods.

Relative growth in agriculture, mining, fisheries, banking, insurance, are proven by official statistics. Why forsake a policy which has produced such results?

Sales Tax Substituted.

Since the war, in trying to meet debt charges, the various governments had to spend more than they got in revenue. The tariff had been reduced, and so a new method of taxation had to be devised. An attempt was made to fill the gap between expenditures and receipts by establishing the Sales Tax.

The 5% British preferential war tariff and the 7½% general war tariff became effective on the 12th day of February, 1915. On June 6th, 1919, the 5% British preferential war tariff was cancelled, and the 7½% general war tariff was cancelled on May 19th, 1920.

Whilst these war tariff rates were in force, the duties collected by them amounted to $191,731,531. When the war tariff was removed, a means of collecting revenue was thrown away, and the effect is illustrated by the fact that the collections from the tariff during the last fiscal year were $53,000,000 less than for the year ending March, 1920.

As the customs tariff was reduced, it became necessary to increase the Sales Tax, which has grown from 1% and 2% to 6%—a very heavy tax on consumers and one which is limiting the sale of goods. I do not say that Canada should not have adopted the Sales Tax. When the tariff was reduced there was no option. Revenue had to be obtained. But past war experience shows that the Sales Tax has not made much progress in other countries. It has been tried only in two or three, and the rates in effect are much lower than ours.

The United States looked into the Sales Tax, but decided not to adopt it. They raised their customs tariff instead.

Great Britain did not adopt the Sales Tax, but instead levied a very heavy Income Tax and imposed a protective tariff on a number of imports.

A Sales Tax of 6% increases the cost of goods sold in Canada. As this fact is overlooked in making comparisons of prices in the United States with prices in Canada, the Canadian manufacturer is unjustly accused of fixing his prices too high.

If the tariffs were substantially increased there is no doubt that the Sales Tax could be reduced and, in a reasonable time, abolished.

The tariff is inseparably connected with the problem of the Canadian National Railways.

In addition to cutting down the cost of operation, these railways, if they are to reach a paying basis, must increase their freight and passenger traffic. I do not need to go into traffic figures here, but it has been proved on many occasions that the most profitable traffic of the railways is the freight they obtain on the carriage of raw materials to factories and of finished goods from the factories to distributors and consumers.

There is little revenue for the railways in the short haul from the United States border.

In 1913 the freight originating on Canadian lines amounted to 56,829,000 tons; in 1922 it amounted to 62,273,169 tons, but the mileage in operation had increased from 29,304 miles to 39,771 miles.

Think over these figures! 35% increase in mileage and only about 10% increase in tonnage since 1913.

Railways require quantity operation to provide cheap service, just as manufacturers require quantity production to make goods cheaply.

If these frequent reductions in the tariff curtail manufacturing, as they do, it follows that they hurt the best customers of the railways and reduce the amount of freight they pay to the railways.

Our railways serve not only economic purposes but also political purposes, because they bind together the provinces of Canada from ocean to ocean. Their prosperity is linked with that of the ports of the Atlantic and Pacific and depends, to a very large extent, on the industrial activity which can be developed in all the provinces.

We firmly believe that the present tariff is too low. It is not developing the country. It is little use for bargaining, because the rates are so low that a preference on these rates offers very little inducement to any other country to give us trading privileges.

The imports for the five months ending August, were valued at $392,000,000, as against $303,000,000 for the same period last year, a jump of $89,000,000.

Not Pessimistic.

These statements are not intended to be pessimistic. Pessimism did not bring this country to its present stage of development. I suppose that every man in this room has his whole stake in Canada. Surely this is proof of our faith in the country's future. We know that Canada will get along some way.

But why take the hard road? Why flounder along in bog and water when there is a good dry highroad, well travelled and familiar, available to us?

Why be poor when we can be prosperous?

Why be harassed by debts and taxes when safety and assurance beckon to us?

Canada can pay her debts and make her way, if she adopts a sound policy of national development.

That policy must provide a tariff which will cause the country's raw materials to be manufactured within the country into finished products, as far as possible. The present tariff is not sufficient. It must be raised.

If this policy is adopted there will be no trouble about getting capital for productive enterprises. It will flow naturally towards the country where it can make a profit. There will be little trouble about immigration. Immigrants follow opportunities for employment.

I believe that the tide is turning.

There are many evidences that people of all occupations realize that a higher tariff is necessary to develop this country; to free us from debt and to bring prosperity to all citizens.

Gold Deposits in Germany.

Gold deposits were reported recently as found in the Eder River near Korbach, in the former small "Fuerstentum" Waldeck, just east of Westphalia. Investigation proved the existence of some gold veins and showed that a ton of earth in the mountains near Korbach produced 44 grammes of fine gold. As the average gold content of this amount of earth is said to be only 10 grammes, the Korbach finds are considered promising and mines are being established. This, writes the United States Commercial Attache in Berlin, is said to be the first time in 300 years that the development of gold mines in Germany has been discussed.

Universities East and West.*

By Sir P. S. Sivaswamy Aiyar, K.C.S.I., C.I.E.

The success of the university is not to be judged by the numbers of its students or merely by the results of the public examinations. Quality, not quantity, should be the aim of all genuine university work. The facile task of suggesting new lines of activity and new developments is superfluous in the case of a university under the guidance of a distinguished and versatile scholar like your Vice-Chancellor who is thoroughly familiar with the requirements and ideals of modern universities. The task would also be otiose, as all ambitious schemes are stranded on the shoals of finance. Many things might be suggested in the way of opening new profession colleges, new departments of the Arts and Science Faculties, art schools, art galleries and museums, providing faculties for reaserch work in various departments, popularizing knowledge by courses of extension lectures, and publishing original works and translations. But all such schemes are severely limited by financial considerations and I have no doubt that the Government of this State would only be too glad to initiate new lines of work if they were in a position to provide more funds. The expenditure on university education by the Government of Mysore in proportion to its finances is perhaps too low. There are no theoretical limits to the expenditure of money on university education. The authorities of the University of Liverpool with their annual income and expenditure of over £230,003 complain of inadequacy of funds. The University of Chicago spends over 3 million dollars a year and the Harvard University which spends more than 5 million dollars per annum would like to spend much more. Before starting work on new fields it would be rather desirable to consolidate the work already undertaken in the different branches of learning in which university education is now provided and see that the institutions now in existence discharge their functions as efficiently as possible. It is only six years since the university was started, but short as the period may be, there is no ground for dissatisfaction with the work so far accomplished. Our opinion as to the progress in education made in this country must necessarily be determined by the ideals we entertain as to the purpose of education. I doubt whether there has been really any serious difference of opinion on this point among the people or between the Government and the people. The ideals of a course of university education must be to train the mind, character and physique of the students, so that they may develop their faculties to the fullest extent, to impart culture and breadth of outlook, to inculcate patriotism and the duties of citizenship, to enable them to raise the level of national efficiency and national welfare and to contribute to the advancement of knowledge. These ideals may or may not have been realized by our universities. The methods pursued may have been faulty and the objects may have been but very imperfectly attained. The political ferment in India has directed men's attention to the question of education among others and the desire for national education has often taken curious shapes and led to a movement for a boycott of schools and colleges maintained or supported by the Government. There can be no doubt that the movement has been inspired rather by a destructive spirit than by any sound conception of the aims and methods of education. The problem of national education is so large that it cannot possibly be solved except by the use of State funds. There need be no qualms of conscience about resort to institutions maintained or supported by the State when the funds are raised by taxation from the people themselves. As put by a recent nationalist writer on this subject "is it the language which is the medium of instruction which makes it national or the agency through which it is imparted or the agency which controls and regulates it or the books which are taught or the standards and ideals which underlie it?" If the level of national efficiency and well-being is to be raised, India cannot afford to cut herself adrift from the currents of modern thought and modern science and knowledge and the only sane course for her is to follow the example of the most powerful nation in the East and to learn and assimilate all that is good and worth knowing in the culture and civilization of the West. In the words of the writer, already referred to "it will be folly and madness to try to discourage the study and dissemination of European literatures and European sciences in India." Nor can India afford

* Part of Mysore University Convocation Address, 1923.

to resort to worn out methods of education, which, whatever value they might have possessed in ancient times, are no longer suitable to the new conditions. There are many among our people who consider that our schools and colleges are too expensive institutions for a poor country and that a reversion to the methods of the ancient *pathasalas* is necessary. Far be it from me to deny the good features of the old system of instruction by the *guru* to the *chelas* in his own house or in the village. But let us see what the old method involved. Taking for instance the life laid down by Apastambha for a student, it was a life of more than Spartan severity of asceticism and aloofness from the world. The mind of the student was looked upon as a wayward thing to be crushed by an iron discipline and drilled into conformity rather than as a tender plant requiring the most genial surroundings and influences for its nature and growth. The psychological problems of the juvenile mind were known and the theory of education was that knowledge should be poured into the mind to be retained and reproduced when necessary. As a preparation for the world and the struggle of life, and its temptations and dangers, as a means of cultivating initiative, resourcefulness and a spirit of enterprise, as an instrument of education in the amenities of social life and the knowledge of human nature, the system was bound to fail. The value of the moral discipline it imparted was discounted by the fact that it was adapted not to the ordinary surroundings of society in which the student would have to play a part in after life but to highly artificial surroundings of a monastic character. The classical story of Rishyasringa who succumbed to temptation at the first contact with world of realities is an excellent illustration of the liability to a breakdown of the moral discipline enforced by the old system. Can there be any doubt that the English public school produces a much more virile character, with habits of self-reliance and independence, or that it instils the spirit of patriotism, or promotes a love of sports and athletics and a spirit of adventure and of courage, or equips the students with a considerable knowledge of human nature and society? The *Gurukula* at Kangri is perhaps the only institution which is modelled upon the old system of *guru* and *chela* and which also seeks to impart some of the elements of Western knowledge. But to the extent that it enforces monastic ideals, it must be held that the training given by the institution is ill-adapted to modern conditions of life. That some of the objects aimed at by the *Gurukula* system are worthy of praise cannot be denied. I am aware that the *Gurukula* at Kangri has elicited tributes of appreciation from various quarters, European and Indian, as an attempt to preserve what is good in the ancient methods of education. The spirit of reverence and devotion to the teacher, the vow of chastity, the love of simplicity, and the habit of self-control are traits worthy of admiration, but we must not suppose that these virtues cannot be acquired in schools conducted according to Western methods or acquired at too heavy price. Even taking the ancient ideals of education at their best, it may fairly be said that their tendency on the whole was the promotion of respect for authority rather than the encouragement of intellectual freedom. We know that in the field of metaphysical speculation no country in the world has produced more independent and fearless thinkers than India. We know also that even in the case of Vedas, the infallibility of which is an article of creed in the orthodox world, they have been eviscerated by interpretation by the Mimamsakas on the one hand and by the Vedantins on the other, till we have only a shell of formal ritualism and a nucleus of a Parabrahma left behind. Generalization has its dangers but every general statement must be understood subject to qualification. There can be no doubt in the mind of an impartial investigator, that the inculcation of submission to authority is a characteristic of the national system of education in India. In fact, it is one of the precepts to be observed by a pupil that he should not contradict his teacher.

The sphere of education is not the only one in which there is a conflict between the ideals of the old world and those of the modern. In many other departments of our social and intellectual life there is a similar conflict of ideals between old and new ideals, between the East and the West. Conflicts of this character between old and new ideals, between authority and freedom, between religion and science are not peculiar to this country. They have been experienced in the West also and they have been or are being solved in some way satisfactory or otherwise. The peculiarity about the conflict of ideals in the mind of educated Indian of the present day is that it is not a case of collision between ideas of the same or similar national origin, but a collision between the indigenous culture of the land and the foreign culture of the West. Patriotic,

historical and evolutional considerations enter the arena and affect the issue. The complete adoption of the Western ideal looks like treachery to one's own country and disloyalty to the spirit of the nation and of the past. On the other hand, a stolid adherence to old ideals and a refusal to assimilate what is best in the culture of the West is a handicap in the struggle for existence. Some adjustment is obviously necessary between the old and new ideas if we are to adapt ourselves to the changed conditions of the world and maintain our national individuality. Not merely is such adjustment necessary in the interests of our national progress, but it is equally required in the interests of individual happiness and peace of mind. Even among the educated classes, there are some who give no thought to the claims of these divergent ideals, who are assailed by no doubts as to wisdom of the past and who fail to realize the demands of the present. A spirit of placid conservatism is the attitude of one section of our countrymen. A contemptuous disregard for the past and an unqualified admiration for the whole and every item of Western civilization is the attitude of another section. Yet another section leads a life of double personality, leading two parallel lives without feeling the necessity, for any logical coherence of beliefs. It was remarked of a certain class of persons by Herbert Spencer that when they entered their oratory they close the door of their laboratory and when they entered their laboratory they closed the door of their oratory. There are, however, large numbers of us who feel the force of the impact between the old and new ideas and the only solution which is practicable is for each one of us to attempt a synthesis to the best of our lights between the divergent ideals, to follow a policy of eclecticism of the East and of the West and is best calculated to improve the efficiency of the nation and the happiness of its citizens. In illustration of my remarks, I may be permitted to refer to a few such cases of divergence between the old and new ideals. Let us take for instance the ideals of marriage in ancient India at their best and the relations between the husband and the wife. Marriages were settled for the bridegroom and the bride and the choice of the parties themselves counted for little or nothing. Exceptions were no doubt allowed in the case of the Kshatriyas who were permitted to contract a marriage in the *Gandharva* form, but the ordinary rule was for the parents to choose and for the children to accept the decision. This practice has continued to the present day and the objectionable features have assumed much larger dimensions. With the growing practice of postponing the age of marriage, both on account of the difficulty of securing bridegrooms and the growing desire to give some education to girls, it is obvious that the wishes of the parties themselves to a marriage must be allowed a very much larger share in the transaction, even if they are not allowed to become the decisive factor. Take again the duties of the wife to the husband as laid down in our epics and in the Dharma Shastras. The husband was the lord and the master, if not also a God, to his wife and even a wife like Sita was said to have followed her husband as his shadow. However flattering and acceptable the ideal may be to the majority of the male sex, is it likely to be acceptable to the educated woman anxious to secure opportunities for self-realization and development, who cannot blind herself to the faults and the defects of her husband and is unable to detect any presence of the divine element in him and recognizes perhaps all too painfully that he is a mere man with perhaps more than his share of the faults of his sex? Is not the ideal of partnership on equal terms more consistent with the dignity of woman, more conducive to mutual esteem and good-will and domestic happiness and more likely to be in accord with the changing conditions of the future?

Let us turn again to the question of filial obedience. No nobler picture of filial obedience has ever been conceived than that of Rama who undertook an exile to the forest for a term of fourteen years to enable his old father to redeem a thoughtless promise made to a young wife. As a Hindu myself I feel fascinated by the picture and feel that no true Hindu can resist the appeal of this charming picture. I know also that our literature loves to teach Dharma by the use of hyperbolic stories; but is it an ideal which is practicable at the present time, or can it be laid down that it is the duty of a son to obey every unreasonable wish of his father, provided it is not sinful? We have another illustration of an extreme case in the story of Parasurama who beheaded his mother at the instance of his father, because she had admired the passionate form of a Gandharva. Let us take again the old ideal of a Hindu joint family with the mutual obligations of the members to support each other and the training it afforded in habits of altruism and its comparative disregard of the rights of the

female members of the family. To some, it may appear as a satisfactory compromise, between extreme individualism and the communistic principle. On the other hand, is not the Dayabhaga system of law which abolishes survivorship a more satisfactory scheme and is not better adapted to modern conditions? Turning to the political sphere, is not the theory of the divine right of the sovereign which is laid down in our Dharma Shastra and which has been asserted or recognized in other countries as well, an outworn fiction which can no longer serve any purpose in advanced countries?

Passing from the question of the double personality in the mental sphere of the educated Hindu, let us cast a glance at the double life led by many an Indian inside his home and outside. There is a want of accord between the ideas, beliefs of the educated Indian and those of his women folk. Inside his house he leads a life of conformity to traditional practices and observances which have lost their meaning for him but still retain a hold on the woman. He acquiesces with an air partly of amusement and partly of his resignation, in their forms of worship, in their religious ceremonies and in their methods of nursing and bringing up children. He lacks the pleasures of intellectual companionship, but he sometimes feels that his women are the sanctuary of his religion and that they make up their faith and devotion for his own want of religion, or of conformity. He had a vague fear that the idyllic atmosphere of his home may be disturbed by female education, but however charming it may be it is rather an atmosphere of racial childhood. There is no other way to get rid of this double life than by the education of women, not necessarily on identical lines with that for men (except of course for those who intend to follow the learned professions), but on lines more appropriate to the sphere of their duties and functions at home and in society. The alteration required in the higher educational courses for women will, I hope, engage the early attention of this University if it has not already done so. The defects in the existing system of education have all been pointed out in the Report of the Calcutta University Commission, a mine of educational experience and wisdom and the suggestions for improvements which it contains are practically applicable to the universities of Southern India quite as much as to Calcutta.

Moving a House.

In the development of the last remaining tract of land in Brooklyn, N.Y., overlooking New York Bay, it was decided to preserve a sixty-year-old house which stood on the property and move it from its original and somewhat lofty situation to a new and lower site on the opposite side of the street. The house, which was a brick-lined frame structure of heavy construction, measured 34 feet by 66 feet, and by reason of its weight considerable skill was required in making the transfer. The fact that the street across which the house was to be moved had to be kept open for traffic served to complicate the problem further.

The first step was to lift the house clear of its foundation and place it on blocking, which was subsequently extended to the edge of the nearer sidewalk. The house was moved on rollers to this point, where it was at an elevation of 28 feet above the street. By removing a portion of the blocking the house was lowered to the level of the bank on the opposite side of the street, from which a similar mass of blocking was built out. A gap wide enough to accommodate the street traffic was left between the two sets of blocking, and this was bridged by long, heavy timbers. The house was then moved across the bridge until it reached its new position, 200 feet from its original foundation. It showed no cracks or any other evidence of its journey.

Crops Electrified.

Electro-culture carried out experimentally by the Ministry of Agriculture in England, is stated to promise the most important consequences to agriculture.

"By a series of field experiments spread over a number of years, the committee have shown the type of electrical apparatus most suitable for the production of high tension discharge, and have also shown that an increase of 20 per cent can be obtained with certain cereal crops."

Last year remarkable results were obtained in pot-culture experiments with grain, an increase of 118 per cent being obtained with only a single month's electrification. These large increases in grain yield were usually associated with very small increases in total yield.

The committee expected by the end of 1925 to have made very definite progress in knowledge of electro-culture, and a definite advance towards its practical application.

Is the United States a Creditor Nation?

By Virgil Jordan.

This query belongs to the order of foolish questions which occupy a highly important place in American public affairs. From the point of view of international economic relations the question is of no actual importance whatever, since the welfare of nations no longer runs in terms of debtor or creditor standing, or "favourable" and "unfavourable" balances of trade. The importance attached to these matters of book-keeping is a relic of the older days of political economy, when it was the faith of nations to sell more than they bought and keep their powder dry. So far as the figures go to-day, every nation is hopelessly bankrupt, but their people go on living somehow just the same. The goal of economic independence, the national ideal of having, like the ideal thrifty individual of the bank advertisements, a substantial pile laid by out of its surplus every week so that the nation may owe nobody anything and be able to take care of itself in its old age, is popular humbug.

There is, however, no need to debate this point here. It doesn't matter now-a-days whether a thing is either important or true. It suffices if many people think it important and true. It's not the facts that count, but the interpretation of them.

From this point of view, the question of the economic standing of the United States is an important question, not only as regards American internal affairs, but as regards her international political relations. Its importance consists first in the fact that nobody can answer the question accurately and second, in the fact that the question is being daily more heatedly agitated in certain circles. These two circumstances taken together are just the things required to make the question important. No question is better suited to political uses than a question which is of no real moment, and to which no one can give any definite answer anyway, but which lots of people want dealt with right away.

The recent statement by the Department of Commerce setting forth in detail the results of the Department's first attempt to get at the facts regarding the balance of trade, including the "invisible" items, in 1922 is direct evidence that the Government has felt the question important enough to itself to take official notice of it. Why? The reasons are rather obscurely interwoven with questions of domestic and foreign policy.

In the first place, the Administration expects certain special groups of interests to attempt a raid on the Treasury in the coming Congress. The American Legion is organizing its final campaign to pass the Soldiers' Bonus Bill at the beginning of the next session. It has canvassed the legislators and feels assured of victory. The only question is whether the President will veto the bill. The Republican party, with true political impartiality wants to capitalize both the sentiment for the bonus and that against it. The legislators will vote for the bill, redeem their pledges to their constituents, and then pass the responsibility to the President. The President will probably veto it, but if he does he must have a most convincing reason for it, in order to silence its advocates. That reason is being manufactured. It is: "The country cannot afford it. We are becoming a debtor nation. The balance of trade is running against us. We cannot load ourselves with four or five billions more of debt."

The same argument will serve as a political weapon against attempts of the recalcitrant farmers of the West to get the Government to fix wheat prices, provide special agricultural credit institutions, and what not that is currently suggested to help the Treasury to get rid of its recent surplus of funds. America is economically illiterate enough to ignore the fact that an adverse trade balance has nothing or very little to do with the practicability or advisability or justice of any of these measures.

That is one side of the picture. It is not so important, and the "debtor nation" theme may not be effective at all in it. The more startling side is this: There are groups and individuals in the United States—patriotic organizations, defence societies, and similar groups—who have been cultivating an attitude of hostility and suspicion toward everything European. These groups form the backbone of the opposition to any measure of intervention in or assistance for Europe. They want to see a policy of militant isolation, of aggressive self-interest, followed in all European relations. They feel that the United States has been duped and swindled in the war, by all the Allies. They consider that affairs in Europe since the armistice justify complete

American withdrawal, and they want pressure brought to bear to collect the war loans. This cynicism extends impartially to all the Allies and Germany. America, it says, has been taken advantage of. She must henceforth keep her hands on her pocketbook, guard her possessions and retire into her shell.

The idea that the United States has put herself into the power of certain European nations financially appeals powerfully but in rather confused fashion to this state of mind. They see the United States in debt to Europe fifteen billions or more. The fact that no one knows exactly what the situation is in this regard is itself part of the alarm. Mr. Hoover's statement that last year's adverse balance of trade was about 586 millions, and may be more in 1923, is only a significant hint. But a word to the wise is sufficient. May not this yearly outgo represent only a part of the "interest" on a total capital debt of untold billions! "Foreigners"—which includes immigrants—own inestimable property in the United States, real estate, securities, what not. They are sending out millions a year in interest and wages and profits. Millions of American paper currency is in circulation abroad. The international bankers are in a plot to put, or are simply foolishly putting the United States at the mercy of these other countries, menacing her security and independence. The foreign countries must pay up their obligations to us. We must clear the slate, balance accounts and close the books between the United States and the world *ad perpetuam*.

So runs the tale. It contains, of course, a lot of political dynamite. It has been widely circulated among bank officials, public officials, etc., and the Administration has been compelled to notice it. Hoover's statement aims to prepare for whatever way public opinion may jump in these matters. In its admission of the difficulty of getting accurate information on the invisible items in the balance of trade, in its appeal to the banks and merchants to colect data and keep records, it plays into the hands of those who foster suspicion of the foreigner. In its account of the relatively small balance it allays fears. If the European problem, the world court, another disarmament conference or any similar item of foreign policy should become an issue in the coming presidential campaign, all this material will be of use one way or the other. It lends itself to the battle on either side.

What is the upshot of all this tempest in the teapot? Leaving aside the politics the fact is, of course, that all the major nations are silently and inevitably being woven together by an increasingly solid network of financial relations. These relations have in the past been sources of wars, and they have influenced the alliances and the political alignments of nations, without a doubt. To that extent it is important to know as much as possible about American money invested abroad and foreign money invested in the United States—all the items of ownership and control which are at the bottom of the current balance of trade at any time.

This interweaving of nations may, however, be made the source and means of control for peace. It will doubtless become so in the course of time. Meanwhile full knowledge will help in that control of the financial and industrial machinery of war, which thus far has rather controlled everything else. If the current discussion of the creditor or debtor position of the United States could be given such a constructive turn, it would be worthwhile. As it is, its reference is altogether to the old terms of national advantage and it is being used to foment internal and international discord.

Peat of Electrical Generation.

The British Fuel Research Board, in its report for 1922-1923, gives particulars of the electricity generating station on the Auricher Wiesmoor in Prussia, which is operated mainly by peat as a fuel. The station has a present generating capacity of 21,050 kilowatts, and consumes about 30,000 tons of coal and 60,000 tons of peat per annum. The peat is mechanically handled from the beds to the boiler house by waggons and conveyors, and an interesting delivery arrangement ensures that it is moved into the furnace without jamming. The average result obtained is 3.0 kilogrammes of peat per kilowatt-hour, though as low a figure as 2.2 kilogrammes has been realized. This station supplies energy to a considerable distance, transmission voltages of 20,000, 40,000 and 60,000 being used. The present annual output of peat is 60,000 tons, though it is hoped to increase it to 100,000 tons. It can only be won from the beginning of March to the end of July; and this and the drying and storing operations are entirely effected by electrically driven machinery.

Improvements in the Manufacture of Shellac.*

By R. L. Datta, D.Sc., F.G.S., F.R.S.E., Industrial Chemist, Bengal.

The results are the outcome of experiments taken up in several shellac factories in Bengal. The methods followed in these factories on a cottage scale were very unsatisfactory, leading to the production of very inferior qualities of shellac. As the improvements effected relate chiefly to the grinding, dusting and washing of lac, the description of the usual process of melting lac has been left out of consideration. The process which is at present carried out in these factories, working on a cottage scale, may be outlined as follows. The crude lac as purchased consists of broken fragments of various sizes containing much sand, earthy matter, dirt and broken sticks. This is directly subjected to a grinding action by hand in stone and muller and in the larger factories in a hand roller grinding mill. The ground material is next sifted through a six-mesh sieve and the bigger particles caught on the sieve are reground till the whole quantity passes through the six-mesh sieve. This is next subjected to the washing process. In some factories the crude lac is first sifted through a six-mesh sieve to extract all which are already fine enough, the oversize being ground as usual till the whole passes through the six-mesh sieve. These two batches are next mixed for the washing operation. In this they save the labour of regrinding the lac particles, which are already fine enough to pass through a six-mesh sieve.

The above methods being defective in many respects the products that were being turned out by them were very poor in quality. It has been found that the quality of lac produced depends on the application of the following principles. These principles, when properly attended to, will enable one to manufacture always "superfine", "fine" and standard quality shellac whatever be the quality of the raw materials, the products being superfine or the inferior qualities according to the quality of the seed lac. From the best quality raw materials only best superfine qualities would result, from medium qualities partly superfine and partly fine and from worst kinds of raw materials imaginable fine and standard quality shellac would be produced, there being absolutely no necessity for the production of low standard qualities and T. N. qualities which fetch much lower prices than the higher grades.

The process of manufacture depends on the following principles :—

(1) It has been found that crude lac ground to six-mesh only encloses within its particles much lac dye which remains unwashed during the process of washing and which contaminates the final shellac during the process of melting. If the particles are ground to pass through a ten-mesh sieve all the lac dye can be washed out completely without there being any chance of any remaining enclosed inside the particles.

(2) The lac particles which are big should be separated out on sieves and treated separately.

(3) The particles which are very small and include dust should be treated separately and the dust, dirt and other impurities got rid of before grinding.

(4) Lac freed from dust and foreign particles should not be winnowed after grinding as the process would be wasteful causing unnecessary loss of fine particles of pure lac free from foreign matter which may as well be washed and melted without any further winnowing.

(5) The removal of all dust before the washing process is essential as the dirt in the wet state has a great tendency to stick to the lac tenaciously and as the smaller sand particles are very liable to stick to the lac and to come out finally in the process of melting as specks of impurities, lowering the quality of lac very much.

(6) The washing process will be more satisfactory and will remove the last traces of dirt if the dust and impurities which can be separated in the dry state are got rid of before subjecting the crude lac to the washing process.

(7) The washing process will require an incredibly short time and much less rubbing than usual if the lac particles are ground to ten-mesh and all the dirt and foreign matter got rid of before subjecting to this operation.

The process to be practically adopted may be outlined as follows :—

The crude lac is first sifted over a six-mesh sieve and divided into two parts. That which is collected over the six-mesh sieve is called (A) and that which passes through is called (B). These two lots are to be treated separately up to the final process of melting. The lot (A) collected over the six-mesh sieve would necessarily be absolutely clean and free from all dust and foreign matter. This is ground and

* Department of Industries, Bengal, Bulletin No. 17.

sifted through a ten-mesh sieve and the oversize ground again and sifted till the whole quantity passes through the ten-mesh screen. It has been found that particles passing through a ten-mesh sieve cannot keep any lac dye enclosed in it. The entire product without any winnowing is taken to the washing department.

The lot (B) is next sifted through a ten-mesh sieve and the oversize ground so that the entire quantity passes through ten-mesh. This is kept separately. The particles which pass through the ten-mesh sieve should not be further ground. They should be simply sifted through a 30 to 40-mesh sieve to eliminate sand and heavy dust particles. The light particles are got rid of by winnowing in basket trays by hand labour.

These lots, *i.e.*, that obtained by grinding the product held over a ten-mesh sieve and secondly that passing through ten-mesh sieve after the separation of dust and lighter particles are next mixed together and constitute lot (B). This is next taken to the washing department.

The particles passing through 30 to 40-mesh sieve are next sifted through a 100-mesh sieve which separates most of the sand and heavy dust particles and the product which amounts to not more than 10 per cent of the crude lac taken is treated as a separate lot, say, (C), after winnowing by the hand labourers.

The washing of the lots (A) and (B) is very much easier and very much more satisfactory on account of absolute freedom from dust and foreign particles. The particles being smaller and passing through a ten-mesh sieve cannot enclose any lac dye within them.

It is generally necessary to allow the lac to stand in water for 12 to 24 hours by which time practically all the lac dye is dissolved. It is then rubbed by hands or feet and the deep red wash liquor is allowed to flow out through a cotton cloth so that any floating particles are caught and returned. A second washing with rubbing generally gives the final product in the case of lot (A) while in the case of lot (B) three washings and rubbings are quite ample to give the final washed product.

The lac is finally dried as usual, and put to the melting process directly without any previous winnowing as the dust and foreign particles have all been separated before washing. The melting process is done in the usual way.

In some cases the crude lac, cakes together in the form of large hard lumps. This happens if the lac is somewhat old and is kept for sometime in bags in congested spaces. When such a lot is received, it will be necessary to grind it to ten-mesh sieve and sift it through 30 to 40-mesh sieve for the elimination of small particles and dust. The product is next washed and dried. In this case, after the drying process, the product should be winnowed and sifted through very fine sieves to get rid of sand and foreign particles which may have been loosened from the lac during the process of washing. That which passes through 30 to 40-mesh sieve should be winnowed in basket trays for the recovery of the last traces of lac.

It has been found that by following the above processes lots (A) of good quality lac give best superfine shellac and lots (A) of any inferior variety of crude lac would not give anything less than fine approaching superfine. Lot (B) of good quality lac will give also fines and superfines while lot (B) of any inferior quality of crude lac would give high standard No. 1 and fine qualities of shellac. Lot (C), which contains all the smallest particles from which all the dirt cannot possibly be separated very effectively and which is never more than 10 per cent of the total, would only give T. N. *i.e.*, the lowest grade of shellac. Lac which has caked together from which hitherto nothing but T. N. qualities could be obtained would give the standard No. 1 or fine qualities of shellac.

In the processes generally practised in small factories only the best qualities of crude lac free from dust and smaller particles give fine sand superfines and ordinary crude lac containing much dust low standard No. 1 and T. N. qualities are all that can be obtained.

The result of a typical experiment carried out in the Khatra Shellac Factory is given below :—

Sixty seers of crude lac was taken. It was sifted over six-mesh so that the bigger and finer particles containing practically no foreign matter were secured. The quantity over six-mesh weighed 30 seers. This was fanned and ground to ten-mesh. This consisted of the first batch and was ready for washing. The minus six-mesh product was dusted and fanned by hand with the following results :—

	Sr.	Ch.
Minus six-mesh product	22	12
Light rejections containing no lac ..	1	0
Dust and rejections (lac to be recovered)	4	4
Lac recovered from light rejections to be used with a subsequent batch ..	1	0

Minus six-mesh product was next sifted out through a ten-mesh sieve to take out what

was already fine enough and to save expense in grinding and lessen the formation of dust as much as possible. The coarse material collected over ten-mesh was ground through the mill till a minus ten-mesh product was obtained. This was ready for washing and consisted of the second batch.

Dust and rejections (lac to be recovered) was set apart for the washing process. The lac of the first batch required only two washings with rubbing to free it entirely from the little dust that adhered to the surface and all the dye contained in the lac. The second batch required only three washings and rubbings to give the final washed product. The dust and rejections weighing 4 seers 4 chitacks were next washed. Most of the sand was separated readily as all settled under gravity. Some four or five washings were necessary to get the final product.

As the crude lac was fanned and dusted before grinding and washing, none of these processes was necessary after washing. The first and second batches amounted to 23½ Srs. and 17¾ Srs. respectively, and consisted of the main bulk of the lac. The dust and rejections were sifted and dusted and this yielded 2 Srs. 11Ch. of lac ready for melting. The amounts of washed lac were :—

	Sr.	Ch.
First batch	23	8
Second batch	17	12
Dust and rejections	2	11
Lac recovered from light rejections to be used with a subsequent batch ..	1	0
Total ..	44	15

The above yield tallies with the best they had on record as the result of their best workings. The yield is therefore not sacrificed in any way for the quality. Their usual yield is much less than the above.

It will be seen that no extra labour is involved in the new process as the dusting which was done after washing, is only done before washing. Though a little more labour is involved in grinding to ten-mesh a lot is saved at the same time by not grinding the dust and the particles which are already fine enough.

Bamboo Paper Pulp.

Mr. J. W. Nicholson has prepared a report on his survey of the bamboo forests in the Angul District and the neighbouring Feudatory States of Bihar and Orissa which adjoin the river Mahanadi, with a view to the starting of a paper pulping mill at Cuttack. This report points out that whereas the minimum requirements of such a factory are usually put at a figure of 25,000 tons per annum, it has been calculated that close on 70,000 tons can be delivered at Cuttack within a cost of Rs. 15 per ton, exclusive of royalty. Although the figures of yield are only estimates, and as such cannot be guaranteed, yet, prepared as they have been on distinctly conservative lines, Mr. Nicholson considers that a total of 50,000 tons per annum can undoubtedly be obtained from the forest areas surveyed. If other areas still unsurveyed are included, he is inclined to think that a total annual supply of 100,000 tons will actually be available. On the basis of this report Mr. Raitt, the cellulose expert at Dehra Dun, is preparing a scheme for the manufacture of paper pulp at Cuttack, and as soon as this is ready capitalists will be invited to come forward to obtain a concession for the purpose. But before they plunge into this new industrial effort we should advise them to consult Messrs. Bird and Company. Mr. Raitt is a theorist. Messrs. Bird and Company are practical people.

Blind Children Made to See.

"We have cured cases of children who have been blind from birth, and who have been given up by the hospitals as hopeless."

This was the statement made to a press reporter by Major J. B. Paget, one of the principal organizers of the League for the Prevention of Spinal Curvature, whose Osteopathic Clinic—the first of its kind in Great Britain—is doing such wonderful work in dealing with diseases arising from spinal trouble.

Osteopathy means the treatment of functional disorders and diseases by locating at exactly what portion of the spinal column the trouble has its root, and readjusting the affected parts.

"There is no danger or discomfort," he said. "The treatment is rather a pleasant form of scientific massage of the spine for a period of about 20 minutes, and after two or three treatments the patient can tell whether it has done him good or not."

The Federation of British Industries.

The most important development that has taken place in British trade organization to date is the Federation of British Industries. It is a central body representative of all the industries of the United Kingdom, set up to safeguard the interests of British manufacturers at home and overseas. Founded in 1916, it is now the largest and most powerful organization of manufacturers and producers in the world and is recognized by the Government and the public of Great Britain as the voice of British industry. For some time prior to the war, British manufacturers had realized the necessity for such an organization, for whilst the various trade and manufacturers' associations were fully occupied with questions of the domestic concern of their respective trades and industry, there was nobody charged with the welfare of British industry as a whole. The size and representative character of the Federation may be judged from the fact that its membership includes all the important Trade Associations in the United Kingdom, covering every field of manufacturing activity. Altogether its total membership, direct and indirect, numbers over 19,000 manufacturing establishments.

When the intensive individualism of the British manufacturer is borne in mind, this accomplishment in so short a time is an immense achievement and reflects great credit upon the founders of the organization. The internal mechanism of the Federation is of a two-fold description, an efficient system of industrial grouping being super-imposed on a geographical organization. The Federation has classified all the great industries of the country into main groups which are in turn sub-divided into groups representing their component and allied trades. Representatives from these various groups, in a ratio according to the strength and importance of the particular industry concerned, form the Executive Council or governing body of the organization. In addition to this system of grouping, district offices dependent on the Head Office in London, and each in charge of a resident secretary, are maintained in all the principal manufacturing centres. By these means the F.B.I. is in the most intimate touch with any one trade or group of trades and all industrial areas throughout the British Isles.

As a federation of industries, the Federation does not concern itself in any way with controversial politics. Its nature is purely industrial and commercial in the widest sense. Moreover, by its declared policy it refuses to deal in any way with labour and wages questions except in an advisory capacity so far as their purely commercial aspect is concerned, and then only when its assistance or advice is definitely solicited by the Government or by an individual member firm or trade association. There is little doubt that this policy has in no small measure contributed to the strength of the Federation, as in cases where organizations on a similar scale have been established in other countries, they have weakened their position by allowing themselves to be dragged into labour and political disputes. The Federation's functions as an organization may for convenience be roughly classed under two heads :—

(1) The safeguarding of the interests of its members in the legislative and economic spheres.

(2) Co-operative action for the retention and expansion of markets for British products at home and overseas.

In the former capacity the Federation by means of expert departments and committees exercises a careful watch on all legislation directly or indirectly affecting industry. Its credit and standing have been such as to secure a recognized place for its representatives on most Government Committees appointed to enquire into matters of industrial, economic or financial policy. It maintains the closest touch with the various Government Departments, by whom its advice and co-operation on questions of industrial policy is constantly solicited. For instance, its President and the head of its Economic Department were both included as trade advisers to the British Government at the Genoa Conference.

Under the second heading the Federation actively encourages and promotes the interests of British manufacturers at home and abroad. In the home market it seeks to further this end by bringing producer and consumer into closer touch: by facilitating a free interchange of views and by the maintenance of smooth relations between the manufacturer and Government Departments and other bodies; by the encouragement of schemes of scientific and technical research of all kinds —with special reference, at the present time, to a scheme for the development of a more

efficient fuel practice in industrial undertakings; and by providing a central intelligence bureau on trade matters. Abroad, the Federation through its overseas organization seeks to encourage the consumption of British manufactures and products in foreign and colonial markets by acting as a clearing house for trade information or enquiries; by undertaking collective propaganda on behalf of its members, either in the way of organizing trade exhibitions of its own or securing representation at those held under other auspices; by the maintenance of cordial relations with foreign newspapers; and generally by bringing the overseas buyer and the home producer into direct and easy touch with one another.

With these objects in view the Federation maintains resident Commissioners in several of the more important of the world's markets, whose officers are intended as a rallying point for British trade interests in the areas concerned. These commissioners act in the capacity of trade ambassadors. Their duties are three-fold—to undertake intelligence work on all trade questions, to carry out propaganda and to act as the official representatives of British trade with local Governments or trade bodies. In addition to these, the Federation enjoys the services of correspondents in practically every market of the world, and is thus in constant touch with the ever-changing conditions of international commerce. Its overseas organizations undertake the recommendation and appointment of agencies, arrangements for passports, individual propaganda in the way of display and distribution of members' catalogues and samples and translation work. Thus the Federation has developed itself as a great co-operative society. In addition to acting for Industry in its collective capacity it performs a wide range of services available to individual members. It is able to supply information on all questions of interest to manufacturers, and has established relations with no fewer than 350 external organizations from whom information is obtained.

In addition, at its head offices the Federation maintains departments under the control of specialists dealing with a wide range of subjects directly or indirectly concerned with commerce and industry. A Liaison Department has been set up for the use of members which expedites correspondence and communications with Government Departments. Through its Railway Transport and Shipping Departments, the Federation constantly tenders expert advice and assistance on all questions connected with transportation by land or sea. This department was of the greatest help to the Ministry of Transport in framing and carrying through the Railways Act which has completely re-organized the railway transport system of the United Kingdom. A Parliamentary Department, in addition to being of general assistance to Industry in regard to legislation, deals with a wide range of individual queries on problems arising out of taxing and Government contracts. There are also an Employment Bureau; a Trade Organization Department to advise and assist in the question of the formation of trade associations; and an Education Department which tenders expert advice on the subject of compulsory continued education in Industry under the terms of the Education Act, 1918. Although the Federation of British Industries does not take action with regard to labour matters, a department is maintained which is in constant touch with all general labour developments and can supply up-to-date information. As an organization and as a co-operative society, the range of the activities of the Federation tends constantly to increase.

Letter Telegrams.

A daily Letter-Telegram service in plain language will be introduced experimentally for six months from October 1, 1923, at one-fourth the rate for ordinary telegrams, with a minimum of twenty words per telegram, between India or Burma on the one side and Great Britain on the other, *via* Eastern. Telegrams will be accepted on any day of the week except Sunday. They will be dealt with telegraphically throughout, normal delivery being made to addressee after forty-eight hours. Telegrams should be written on the yellow forms used for the deferred foreign telegrams. The address must in every case be preceded by the special instruction "DLT," which will be counted and charged for as one word. The rates which will apply to the daily Letter Telegrams will be Great Britain *via* Eastern for the first 20 words or less (including the indication "DLT.") Rs. 6-4 and for each additional word As. 5.

International Chamber of Commerce.

It will be remembered that, at the Congress of the International Chamber of Commerce, held at Rome in March, a resolution on world restoration was unanimously adopted. The principal points of the resolution, which was put forward by Mr. Fred. I. Kent, Vice-President of the Bankers Trust Company of New York, were as follow :—(1) A definite solution of the reparations problem is to be recommended on the basis of the debtors' possibility of paying. This is necessary in order to restore international confidence, to make credits possible and to provide security against the violation in frontiers. (2) While the repudiation of war debts must be disallowed, it is important to take into consideration the debtors' present and future capacities to pay, based on sound national budgets, with increased savings from the reduction of military expenditure. (3) There must be stabilization of budgets, not by excessive taxation, but by the exercise of the strictest economy. (4) Inter-governmental loans must be disapproved, because they involve political complications, and there must be a gradual elimination of inflation. (5) The artificial stabilization of exchange must be condemned, and the ultimate return to the gold standard must be advocated. (6) A general economic conference for a final adjustment is to be advocated as essential, although it is recognized that it is inopportune to offer any suggestions for the settling of the present situation between the Allies and Germany.

Composition of the Committee.

An international Committee was at once appointed to give effect to the purposes of the resolution. Mr. Kent himself became Chairman, the other members being: Mr. Maurice Despret, President of the Board of Directors of the Bank of Brussels; Mr. Maurice Lewandowski, Director-General of the Comptoir National d'Escompte of Paris; Mr. Alberto Pirelli, President of the Pirelli Tyre and Rubber Company of Milan; Sir Felix Schuster, Director of the National Provincial and Union Bank of England; Mr. K. A. Wallenberg, President of the Stockholms Enskildabank; Mr. W. Westerman, President of the Rotterdamsche Bankvereeniging; Mr. Willis H. Booth, ex-officio, President of the International Chamber of Commerce and Vice-President of the Guaranty Trust Company of New York.

The Committee has held two meetings since its appointment—one in April and one on the 19th ult.—at the headquarters of the International Chamber of Commerce, 33, rue Jean Goujon, Paris, and has already gathered together a considerable amount of material bearing on the situation as it develops from day to day in Europe. The Council of the International Chamber of Commerce has also approved of the Committee extending its inquiries to obtain statistics regarding the actual foreign trade of Germany with all commercial countries and to ask for the preparation of such statistics where they do not as yet exist. This, of course, covers primarily the period since the armistice, when various factors have prevented German statistics from being accurate and have rendered the statistics of other countries, in some instances, difficult of compilation. Furthermore, the Council has approved of the Committee endeavouring to ascertain, as far as possible, the amount of German balances and investments abroad. Both these inquiries offer serious difficulty in fulfilment, but the Committee is nevertheless determined to use all its efforts to ascertain the maximum data possible, and in this effort will have the co-operation of the National Committees of the various countries affiliated with the International Chamber.

The Chairman of the Committee in the last few months has made a point of visiting Austria, Belgium, France, Germany, Great Britain, Hungary, Italy, Czechoslovakia and Holland, and has given the results of his studies and conclusions to the Committee in a report which he presented at their last meeting. The general tenor and tendency of the report were approved by the Committee and referred by them to the Council. In his review of the situation, Mr. Kent refers not only to reparations and inter-allied debts, unbalanced budgets, depreciated exchanges and the question of international credits, but also touches on other matters, including unemployment and more particularly the governmental difficulties which every country has had to face. Much of what Mr. Kent has to say is of political rather than commercial interest, but we give below his views on certain subjects closely connected with industry.

Railways.

The war, says Mr. Kent, has left many of the railways in European countries in a very difficult position. They have insufficient or

broken down equipment, too many employees, sometimes too low freight and passenger rates, and often inefficient management. The changing of frontiers has also increased the difficulties tremendously and has greatly increased the costs of operation as well. Transportation plays such an important part in trade, and the well-being of a nation depends so largely on its efficiency, that railways should not be allowed to become the playthings of politics. Instead, business organizations in each country should get together and appoint a committee of experts to represent them in the study of their railway systems. From the reports of such experts, business organizations should develop some plan of procedure that will enable them to co-operate with their Governments toward increasing the efficiency of the railways.

There are many honourable men in responsible positions in the Governments of European countries who would welcome such co-operation, but who are now overwhelmed with self-seeking forces, because business men, who should have the good of the whole country at heart, are not exercising their rights as individuals nor their duties as citizens and are not sufficiently active in advising with their Governments for the protection of all concerned. It would also be valuable, particularly where frontiers have been changed by treaties, for the committees of experts in countries with a common boundary to consult together before making their reports, and again for the business men's committees on procedure to do so as well.

Unemployment.

The problem of unemployment has been common to most European nations since the armistice. There would seem no question but that in a national emergency the community should help to bear the burden of the unemployed, but it should be done in such manner as not to increase the evil that it is intended to alleviate. It inevitably breaks down the character of men to be paid wages in order that they may maintain themselves in idleness. In many countries men receiving unemployment doles have refused to take jobs offered them, as their habits of working have been broken and they have degenerated into mere trouble-makers, for which, of course, they have ample time.

When a Government pays any of its citizens and receives nothing in return, it places such non-producing citizens in a position to compete with the workers for their production and so raises the prices of all things required by labour for its livelihood. Unemployment doles, therefore, are bad for those receiving them and bad for the community at large. Many countries in Europe are now struggling with this problem and their difficulties are greatly increased because it has not been solved properly.

Instead of Governments paying doles for unemployment, they should find a means to make those receiving doles work for them in some manner that would be of benefit to the community, that would, under conditions, induce the recipients to take positions when opportunity offered. Some Government officials have claimed that such an arrangement is impossible, as the Government would have to buy raw materials in addition to paying doles. They have not stopped to figure that, if operations are confined to activities which do not require the importation of raw materials, the demand of the Government for domestic materials will increase the demand for labour and thereby lessen the amount of unemployment. Labour is often fearful that if the Government makes a means of employment labour will suffer, but labour suffers in any event, as non-producers, in competing for food, clothing and shelter, raise prices and increase the cost of living to labour. This condition is certain to continue longer while payment is being made to the unemployed for doing nothing than would be true if labour were required in return and an incentive to obtain employment were created in the minds of those out of work. The situation is distinctly a business problem and should be studied by business men in every country through their organizations in co-operation with labour and with the Government.

Foreign Exchanges.

The fluctuation of the foreign exchanges in European countries is one of the greatest handicaps to trade and commerce. Such fluctuations, however, are inevitable while governmental budgets are in their present state of discord and while the reparations question remains unsettled. At the moment, therefore, all efforts should be directed toward improving Government in every country and in obtaining the highest type of men for legislative bodies.

As progress is made in this direction the foreign exchanges will become more steady and when a final settlement is concluded between the Allied countries and Germany it is conceivable that a way may be found to

bring the fluctuations of the foreign exchanges within limits which will allow foreign trade and commerce to develop naturally and profitably.

Evolution.

Restoring liveable conditions in Europe is a matter of evolution which requires constant and careful thought and great patience. The remedy lies in the continued application of intelligence to problems of Government wherein all the difficulties which beset the European nations of to-day take form. Two things are required:—First, right principles of Government, and second, the proper men in Government to carry them out. Neither alone will avail. Business men must take their proper part in securing both for their countries, and while it means the hardest kind of work, yet intelligently directed effort is certain to be successful.

It is felt that better progress can be made if Commissions are organized in every country for this purpose by the business men and that such Commissions keep in close communication with the International Chamber of Commerce, which then can act as a clearing house of ideas and give the Commission in each country the benefit of the experience of the Commissions in every other country. This can be done by special correspondence with the Chamber in special cases, and after Commissions are formed and get to work it may prove desirable for the International Chamber to issue regular or special bulletins reporting on the progress and problems of each to all of the Commissions.

Under such a system, rapid progress in the development of both sound economic conditions and sound political conditions should be certain. For the purpose of carrying out this idea it is recommended that the International Chamber actively take up the subject of forming such Commissions with its members in all countries where it is represented and with the proper business men's organizations in other countries. It is recognized that European conditions cannot be made fundamentally sound until the differences which exist at present between the Allied nations and Germany are satisfactorily settled. Further, the International Chamber of Commerce as such has no position or authority that would enable or justify it in attempting to step in between the Allies and Germany under present conditions. Its work in connection with general European difficulties must therefore be confined for the present at least to activities aimed to develop greater soundness in Government and economics, so as to enable a more rapid return to liveable conditions in Europe upon the settlement of the Reparations and other questions that now separate the Allied nations and Germany.

Some General Axioms.

In addition to the foregoing observations, Mr. Kent also makes some general axiomatic statements, and we think that business men everywhere will acknowledge the soundness of his views, of which the following is a selection.

Government should not be a haven for those who would live upon a community without producing anything to help that community exist.

Government should not operate in industry as any inefficiency of its officials can be hidden through taxation of the people, a power which Government should only be able to exercise for the benefit of all the people, and further, the Government operation of industry of necessity curtails the rights of individuals which the Government should protect.

To obtain the best Government for all the people the rights of groups must be studied equally with the rights of individuals, as populations have become too great and too much condensed to enable individuals to do more than represent groups. Such groups from among the people form themselves naturally from their occupations, their political and social views and their congenialities of mind. There should be co-operation between all such groups in every possible way for their mutual benefit, and those individuals who endeavour to create group hatreds by playing upon the passions of those in their own groups should bear watching as they can only be insincere and self-seeking.

Instead of friction developing between such groups, the highest degree of co-operation is necessary to get the best results for all and to enable simple and effective legislation to be enacted that will not carry with it huge governmental waste and an increased national burden. The world depends for its living, its culture and its comfort upon agriculture, industry, commerce and trade, all of which represent business. It is essential therefore that Government, while regulating business so as to prevent the development of injustice, shall also give it the greatest possible freedom. If it is regulated to the point of curtailment of production great harm will result.

As only expert business opinion can determine where the line between regulation and

freedom shall be drawn, business organizations should develop a positive, effective and continuing means to advise with the Government in every country. They should develop all the power that they can to keep Governments from being wasteful, autocratic and interfering. They should co-operate with every constructive force and fight every destructive one. They should work with the representatives of agriculture and the representatives of labour for the mutual protection of all.

Future of Whitley Councils.

There are many signs that Whitley Councils are again coming into prominence. In the House of Commons there have been several references to the subject and demands have been made for an official reconsideration of the position, says a "Times" correspondent.

The settlement of the agricultural question has brought into the foreground the possibility of giving the force of law to agreements reached by Industrial Councils. This has been urged by several of the Councils, and it may be convenient to quote paragraph 21 of the Whitley Report, in which the Committee said that "it may be desirable at some later stage for the State to give the sanction of law to agreements made by the Councils, but the initiative in this direction should come from the Councils themselves." It cannot be said that, as yet, this initiative has been very forcible, but there are signs that a movement may be expected in this direction.

It is true to say that in respect of the wider aspects of the Whitley system there is room for some disappointment. In the settlement of "the general principles governing the conditions of employment, including the methods of fixing, paying, and readjusting in wages", there have been many successes, but it cannot be said that workpeople have been ready to place their knowledge and experience at the disposal of the Councils, nor can it be said that much has been done in the direction of encouraging industrial research and invention.

There is still very real prejudice against improved methods of working, and it cannot be said that the interest of workers as a body has been aroused in the carrying of new ideas into effect and in the quality and design of products.

On the thorny question of control the wording of Whitley Report is cautious and its cautiousness has been fully justified. "The object is to secure co-operation by granting to workpeople a greater share in the consideration of matters affecting their industry, and this can only be achieved by keeping employers and workpeople in constant touch."

If this paragraph had been read as carefully as it deserves we should not have had the Trade Union Congress report on Industrial Negotiations and Agreements complaining that the "Whitley Committee recommended a rather more concrete embodiment of these views (*i.e.*, the sharing of control) than their authors bargained for, and employers were, therefore, largely hostile." The meeting together to consider "matters affecting their industry" does effect much in giving articulation to the workers, but it does not dethrone control or share control. It does enable calm reasoning to take its proper place in the conduct of affairs between man and man, and even the report mentioned above admits the value of obtaining "some insight into administration." It is this and not the abandonment of the responsibility of management which is likely to be of value, above all to educational service.

Probably a revival of interest in the methods of joint councils will begin with learning the precious lesson that this point must be made clear. Probably, too, there will be a tendency to base some system of profit-sharing or co-partnery upon a foundation of Works Councils. There are some half-dozen instances where this has already happened. It enables the profit-sharing to be attempted without that initial suspicion which has attached to systems devised from the management side. It gives the Works Council a legitimate aim; and if there is reasonable patience in seeking this particular end—for haste in this matter is especially dangerous—the Works Councils will probably achieve the other aims to which reference has been made. "Whitley Councils are degenerating into standing negotiating committees," says the Trade Union Report, "which may indeed be of service but which cannot carry out the aims of those who enthusiastically supported Whitleyism in 1918–19." There is much truth in this, but we shall best realize that truth by means of more deliberate thought to what we intend by joint councils and less vague enthusiasm as to a new heaven and a new earth.

The Place of the Woman Welfare Supervisor.

By Mark Meredith, M.E.A., M.I.S.A.

The value of welfare work was recognized during the war, and its continuance and extension, notwithstanding the subsequent period of trade depression, is a sufficient testimony to its value and worth. It is significant that its adoption is now regarded as a necessity by most up-to-date firms and that it is now firmly established as a vital and integral part of industry.

There are probably at least 1,000 fully-qualified welfare superintendents in industry at the present time, and their number is rapidly growing. One looks forward to the time when every factory or institution of any size will have its own superintendent responsible for the human side of the business. The problem of the small factory or unit will probably eventually be solved by grouping—several firms uniting together to run one welfare scheme. This has already been tried with considerable success in many instances. It has also been suggested that the smaller houses might appoint a member of their staff who could devote part of her time to labour and welfare problems and the remainder to some other work, such as wages or clerical duties.

The trained welfare worker is particularly in demand in cases where girls from 14 to 18 years of age are employed. This being a most critical age of their development, both physically and mentally, it is imperative that they should be under a woman's supervision in all matters relating to their health and progress, though this, of course, would not extend directly to output. Their general efficiency as producers, however, will be considerably increased, whilst at the same time their health and happiness will materially benefit when steps are taken by the employer to see that their welfare is the chief duty of a woman officer appointed as his representative. Again, where married women are employed the advice of a woman welfare supervisor is invaluable, and her help and guidance are usually much appreciated.

More harm than good can be done if the wrong person is appointed for this important work. The days of experiments should surely be past. We have had a sufficient warning of the trouble and misunderstanding which can be created when unsuitable candidates have been appointed by a firm who either could not or would not take the trouble to make a careful selection. A manager who would spare neither time nor trouble in choosing a qualified chemist or engineer has been known to appoint haphazard a man or woman to be in charge of human being. To-day there is no excuse for such indifference, and there is no room for the amateur in welfare work. The candidate anxious to adopt the profession should have received a training both in practical and theoretical industrial administration. There are no lack of facilities, as nearly all the universities now run courses of training, and the Industrial Welfare Society is always ready to advise and help prospective students as to the one most suitable for her needs. Candidates must have a good all-round education up to the matriculation standard, and must be possessed of tact, sympathy and understanding, with some experience in dealing with women's or girls' needs and difficulties. They must have good health, as the work, although varied and interesting, is very exacting and frequently long hours have to be devoted to it. The course lasts two years, although it may be shortened at the discretion of the university authorities in the case of those already possessing good qualifications or experience. The duties of the welfare worker are now fairly well known and need only be given in broad detail. They vary, of course, according to the special needs of each industry and the traditions of each factory. In some cases the superintendent is expected to tackle single handed the supervision of all health matters, the organization of a canteen, the employment and labour problems so far as they affect women and girls, and to give help in all recreational and social activities. Usually, however, as her work grows she can have the assistance in one or more of these directions. In any case she will always aim at deputising part of her duties and sharing these out amongst the employees themselves. In the modern factory many, if not all, of the welfare problems are tackled in Committee, which is all to the good as it gives every one a common interest. It is safe to say that any welfare scheme is foredoomed to failure which has not the co-operation and good-will of every unit of the working force. The progressive welfare supervisor will gradually come to be the executive officer for the Works Welfare Committee,

suggesting rather than dictating, guiding rather than leading.

It is a mistake to think that the principles of welfare are only necessary to the factory or workshop. They are of universal value, and their application should be universal also. The large retail stores, the multiple or branch shops, clerical offices, laundries, etc., are all recognizing the need for organized welfare, and its efficacy, when properly tested and given a fair trial, is incalculable. Wherever there are human beings employed there is the case for the adoption of welfare.

Welfare should increase the health, personal resourcefulness, social equipment, earning power, and happiness to each employee in the business. If conducted on sound lines with the backing of the management, the co-operation of a representative committee, and the good-will of the general body of employees, it should prove a potent factor in increased efficiency and happiness. It is a satisfying occupation for the man or woman who loves humanity, and there will always be a demand for those who are willing to give their brains and hearts to the profession and embrace it as a life-long devotion and not merely as a career.

Protection of Eye-sight in Industry.

In recent years technicians and students of hygiene have again given much attention to the problems of industrial lighting and the protection of eyesight in industry. Even before the war much study was devoted to these subjects by the competent associations in Great Britain and America. The problem of industrial lighting is not only connected with industrial hygiene generally and with the protection of eyesight, but also has a direct bearing upon the important questions of output and vocational guidance. Investigation has shown beyond all doubt that adequate lighting of the factory and of the post at which work is done is absolutely necessary to ensure cleanliness, the prevention of fatigue, the avoidance of accidents, discipline among the staff, economical use of raw materials, improved quality of the articles manufactured, and increased speed and better supervision of the work.

A new publication of the International Labour Office dealing with the protection of eyesight in industry aims at giving a general view of the various aspects of this most complex problem and the results of the investigations of scientists and technical experts. The report is to a large extent based upon the conclusions of the International Illumination Commission which met in Paris in 1921, and upon the information collected by scientists in various countries. The first part gives definitions of photometric units and magnitudes the various factors affecting natural and artificial lighting, and the quantity of light required for various kinds of work.

An Important Factor.

The following chapter contains a detailed study of a factor which is too often neglected in considering problems of lighting, namely, the nature of the work to be done. The size, colour and character of the surface of the work are, of course, liable to produce either a favourable or unfavourable effect upon the eye. The third chapter is devoted to the eyesight. There is also a special chapter dealing with eyestrain. Some attention is given to the importance of lighting in the prevention of industrial accidents and in avoiding eyestrain, and an account is then given of the legislative measures which have been adopted in various countries to ensure the proper, natural and artificial lighting of industrial premises. As regards the prevention of eyestrain, it should be noted that the interesting question of vocational guidance in its relation to eyesight is dealt with in detail and that tables showing the demands made by different occupations upon the eyesight are given. This question deserves the special attention of those who issue certificates showing the qualifications of children for employment or who are responsible for the admission of adults to certain kinds of work which require specially good eyesight.

Sir Henry Lucy, in his new *Diary of a Journalist*, published by Messrs. Murray and Co., tells a story of Mr. Lloyd George being marooned, through a mistake of his chauffeur, on a deserted spot by night, during the war. He walked on till he came in sight of a large building, which turned out to be the country lunatic asylum. The gate-keeper proved gruff, and to explain matters the visitor told him, "I am the Chancellor of the Exchequer." "Yes, yes," said the porter, gruffly. "We 've got six of 'em inside. You go out to the gate, turn to the left, and you will get home before morning."

The Empire Forestry Conference.

The *Canadian Forest and Outdoors* gives a fair summary of the Empire Forestry Conference Sittings. We note that the anticipations of abundant results flowing from the Second Empire Forestry Conference were well justified seems now to be established beyond per-adventure. The Conference concluded at Victoria on September seventh with a banquet under the auspices of the Government of British Columbia and the forty delegates departed for their homes well convinced that the chain of meetings, discussions, and inspections of Canadian forest conditions and forest industries will be reflected in broadened knowledge and quickened spirit wherever Empire foresters and forest problems join issue. It was above all a serious and hard-worked Conference, turning every day and opportunity to the fullest advantage and carefully sifting essentials from incidentals. From whatever part of the Empire the delegates came, and whatever the similarity or contrast in the work with which they were engaged, each participant insisted—and the Canadians no less protestingly than others—that he maintained the attitude of a grateful learner, and such a spirit, as might have been expected from foresters, gave the work of the Conference a spontaneity and vigor that defied monotony and established the utmost good-will.

The general aim of the Conference was to find ways and means of making the Empire self-sustaining in its timber supply. This involves careful stock taking of the forest resources, the pooling of information in regard thereto, and the establishment of facilities for increasing Empire trade generally in forest products. It was brought out very clearly in many of the discussions that trade possibilities have been neglected, often purely through ignorance regarding supplies and facilities. The Conference undoubtedly succeeded in placing plainly before the people of Canada and other parts of the Empire the actual condition of forestry affairs wherever the British flag flies.

The executive handling of the meetings and travels could not have been in abler hands. Lord Lovat presided with the same distinction that made his chairmanship of the First Empire Forestry Conference in London in 1920 so noteworthy. His business-like insistence that programmes should commence and conclude on time in itself was a spur to brevity and conciseness and a welcome innovation to many who had seen certain forestry conventions run to discursiveness. The general handling of the Conference, an involved and exacting job, fell to the competent hands of Mr. E. H. Finlayson, Acting Director of Forestry, Ottawa, and to Mr. Roland D. Craig, of the Dominion Forestry Branch, and Dr. Ernest H. Voorhis, of the Natural Resources Intelligence Service, who in their efforts were excellently aided by the other Dominion Government branches, the Provincial Forest Services, and by the Canadian Pulp and Paper Association, the Canadian Lumbermen's Association and other organizations and individuals.

At the opening meeting at Ottawa on July 25th, the delegates were addressed by the Prime Minister, Rt. Hon. W. L. Mackenzie King, who after referring to the impending investigation of the question of pulp-wood export from Canada, said :—

"Next to the agriculture, the wood industries constitute the most important source of our natural income. How rapidly this source is being depleted by fires, by insect pests, by exports of raw products, by undue exploitation and unnecessary and often wanton destruction, few if any of us have begun to appreciate.

"We recognize, that to restrict trade in any direction is the last of measures to which a Government should resort, and we are hopeful that in the benefits which will accrue to our foresters from association, consultation and conference with forestry experts from other parts of the British Empire, as well as from information which we hope our own commission will elucidate, we may find a yet more excellent way of dealing with the problem of the economic development of our forest resources. We recognize that in the past we have been profligate with our forest wealth that we have wasted our heritage, that, while we have been proficient in utilization, we have been deficient in preservation. Whilst we have talked in terms of quantity, we have lost sight often of the importance of quality, not without its cost to our trade. Some of these evils, and some of the misconceptions and false impressions which have grown out of them we hope this Conference will go far to remove."

In a forceful reply, Lord Lovat referred to

the practical value of calling together the responsible foresters of the Empire.

"On the subject of conference in general, I am satisfied that the personal interchange of ideas is a necessary conception to the modern idea of Empire. It is necessary if the Empire is to exist that we get together and share views. It is necessary for the constituent parts of the Empire to realize the ideal of the individual parts. It is necessary to consult together for policy and to take joint action. Without this I am afraid we shall fall into the errors that have frequently occurred in the past. Since the war if we have been taught anything it was that surely a machine can run for a common purpose, when there is an interchange of feeling and ideals. And we must employ this in times of peace."

During a reference to the value of forestry conferences later on in the sessions, Lord Lovat said that in calling together the present conference Canada had made a wise decision by asking the various parts of the Empire to be represented not only by the growers of trees but by the users of lumber. There was therefore representation at this Conference not only of technical foresters but of men who could speak with authority on the utilization of the trade in, and the shipping of timber and timber products. The importance of linking up the grower's interest and that of the consumer could not be too strongly stressed. All discussions on timber production which were not based ultimately on timber realization and utilization were founded upon dangerous ground.

Another point of the greatest importance to the Empire was the survey of timber resources. In this connection Lord Lovat said: "It is to be hoped that before we hold our next forestry conference many countries in the Empire will have taken this question out of the realms of conjecture into those of acquired fact. Until we know all about our timber supplies it is impossible to persuade the man on the street, the individual member of parliament, or the ministry responsible, that any action, and if so what action, should be taken."

"It is a curious fact," he continued, "that while all companies by law and most business men in their own interests produce a balance sheet in some shape or form in which not only their capital situation is shown but also their annual returns, by means of a profit and loss account, forestry resources, the greatest assets to many units of the Empire, are in the majority of cases subject to no such periodic valuation."

During the tours, most useful and inspiring contacts were established between the delegates and Provincial Ministers and officials of the departments of lands and forests. As the tour proceeded, the delegates discussed the subjects presented at previous meetings in an effort to crystallize the views of the conference into the form of resolutions.

Labour Banks in the United States.

One of the most striking developments in the past two years in the field of labour and industry in the United States is the establishment of some twenty labour banks with a capitalization of more than $6,000,000. The first and the largest institution of this kind to be established was the Brotherhood of Locomotive Engineers' Co-operative National Bank, with a capital of $1,000,000. The principle upon which this bank was founded in 1920 has been applied generally by other labour banks. Holdings of stock are limited to three shares per person, except in the case of directors, who are required by law to hold ten shares. All shares are owned by members of the union, except for a few shares held by experts whom it was found necessary to bring into the venture on account of their technical knowledge. Dividends on the $1,000,000 of capital stock are limited to 10% per year: profits above that amount and above the statutory reserve requirements are divided among the persons having accounts in the savings department.

The field for labour banks in the United States is stated to be particularly favourable one. There are 19,000,000 depositors in the national banks alone. This is an average of about one depositor per family. There are some five million trade unionists and among these the average of savings accounts per family runs high. The savings ability of American workers is partly indicated by the fact that there is throughout the country an average of one automobile to every eleven persons. This means a high automobile average among the families of workers and automobile ownership is at least one indication of savings ability, or at least of savings potentiality. The wages of labour in the United States amount to about $25,000,000,000 per year and the value of farm produce is nearly as much.

The Pest Act and Cotton in Madras.*

By the Director of Agriculture, Madras.

In the Madras Presidency several different kinds of cotton are cultivated. Chief among these are Yerrapatti, Tellapatti, Karunganni, Uppam, and Cambodia. All of these cottons are grown as rain-fed crops, *i.e.*, without the aid of irrigation, but Cambodia cotton is more commonly grown as an irrigated crop. Except in a few favoured localities, Cambodia cotton requires to be irrigated if it is to give really heavy yields.

All of these cottons, whether they are grown with the aid of irrigation water or without, whether, like Uppam and Karunganni, they belong to the country, or like Cambodia cotton have been introduced from a foreign country, are attacked by insects.

Insect Pests of Cotton.

There are three insects which are responsible for most of the damage done to cotton in this Presidency. These are (1) the stem-weevil, (2) the pink boll-worm and (3) the spotted boll-worm. The stem-weevil is not found in the Telugu tracts. It is very common in the Tamil districts and attacks every kind of cotton grown there. The other two insects are found everywhere where cotton is grown.

The Stem-Weevil.

The stem-weevil does damage in this way. The female weevil pierces the stem of the plant and lays an egg in the opening so made. From this egg a small grub hatches. This grub bores round and round the stem of the plant, feeding as it goes. Some plants are not strong enough to withstand the attack of the grub and wither and die. Other stronger plants grow very rapidly at the place where the grub is boring, make good the loss and are able to keep alive. Such plants show that they have been attacked by the presence of a big swelling at the point of attack. Sometimes a plant may be attacked two or three or more times and will have several swellings. Some of these plants may die. Some may continue to live until a careless cooly or a strong wind bends the plant over suddenly and the stem breaks. The plants then wither and die. The stem-weevil thus does damage by reducing the number of plants per acre and so reducing the yield.

The Spotted Boll-Worm.

The spotted boll-worm does damage in this way. While the cotton plant is young the moth lays its eggs on the plant. From the eggs small worms hatch out. These worms eat their way into the stem from the top and into the branches at the joints. A stem which has had its top eaten by the spotted boll-worm, ceases to grow, and any further growth the plant makes has to be done by the branches. Thus it takes longer for the plant to begin to produce flowers and the crop is made late.

Some cultivators think that the spotted boll-worm by eating into the stem and branches causes the plant to produce more flowers. This is a mistaken idea. One plant may appear to give more flowers but in many cases the plant is so mutilated by the attack that it produces only a very small number of flowers indeed.

Later when the flower buds begin to appear in fair numbers the spotted boll-worm turns its attention to them. It bores into the base of the bud and consumes the contents. The bud then falls off the plant. More flower buds have to be formed to replace these before any crop can be obtained.

Later still when the bolls begin to form, the worm attacks these. It bores a hole into the boll. If the boll is small the whole of the contents may be consumed. In any case these small bolls when attacked fall off the plant. The larger bolls may have only a few seeds attacked. In this case the boll does not fall off the plant, but the cotton is spoiled. The lint on the attacked seeds is generally weak and the lint on the seeds near by is frequently discoloured. Through the hole in the boll made by the spotted boll-worm other diseases enter. These attack the lint and so weaken it that it becomes useless for spinning.

Thus the spotted boll-worm by first attacking the plant, delays the production of flowers, it then attacks the flowers and delays the production of bolls and finally it attacks the bolls and delays the date when picking can commence. It also spoils the quality of the lint by its own attack and by making an opening for other diseases to enter the boll.

The Pink Boll-Worm.

The damage done by the pink boll-worm is in this Presidency mainly confined to the boll. As in the case of the spotted boll-worm,

* Part of Digest No. 12 of the Madras Agricultural Dept.

the moth lays its eggs on the plant, the young worms hatch out and bore their way into the bolls. If the bolls are small they fall off the plant, if half grown they remain on the plant, but part of their contents is damaged.

REMEDIES.

Now all of these insects, once they have begun to attack the cotton crop, increase very rapidly in numbers. The damage done, therefore, increases as the season progresses. If at the beginning of the season there are only a few adult insects only a few plants will be attacked. As the season advances more and more plants will be attacked but by the end of May when the first or season-picking finishes not much damage will have been done. By that time, however, there will be a large number of each of these three insects, the second or kar-picking will contain a large amount of damaged cotton, and practically all the plants will have been bored by the stem-weevil. At the Agricultural College it has been found that out of every 100 flower buds produced by a plant during the first half of a season only 9 became bolls, and of these 9 an amount of cotton equal to 1 boll is damaged, whereas in the second half of the season out of every hundred flower buds produced only 6 mature bolls and of these 6 exactly one-half is damaged.

Thus by the time the kar-picking is at its highest, there is a very large number of each of these three insect pests. If, therefore, a new crop of cotton of any kind is sown in the neighbouring fields before or only a short time after the old crop, whether Cambodia or not, has been pulled up, there will be a large number of insects ready to attack this new crop. The damage then done to this crop will be heavy. The number of bolls picked per plant during the season-picking will be reduced and a larger amount of this picking will consist of damaged and worthless stuff. The value of this cotton will then fall and the profit per acre will be reduced. This is precisely what happened when cultivators used to plant Cambodia cotton and leave it for 3 or 4 years before they pulled it up. If, however, a good interval is left between the uprooting of one crop and the sowing of the next, *i.e.*, if there is a long starvation period when there is very little food for these insects many of them will die without being able to breed. There will then be fewer insects waiting to attack the new crop and the damage done will be small. The longer the interval between one crop and the next, the more insects will die, the fewer there will be left to attack the new crop when it is sown and the less will be the damage done.

WHY THE PEST ACT WAS INTRODUCED ?

Now before the year 1919 cultivators who were growing Cambodia cotton did not pull up the crop every year but were leaving it to grow for several years. Thus all the year round there was always plenty of food for these three insects to feed upon and breed. The result was that a very large proportion of the crop was damaged. Buyers began to complain that Cambodia cotton had deteriorated and refused to pay good prices for this cotton. If this state of affairs had been allowed to continue the price of Cambodia cotton would have fallen to a very low point and many buyers would have refused to deal in this cotton.

In 1919, therefore, Government ordered that in certain tracts, all Cambodia cotton and Dharwar American cotton should be pulled out by the 1st of August. This date was fixed so as to give an interval of at least two months between the uprooting of one Cambodia crop and the sowing of the next. This interval is not nearly long enough to reduce the numbers of insects to such an extent that the damage done to the crop is only very small indeed, but has been sufficient to reduce considerably the amount of damage done. The result has been that the cry that Cambodia cotton has deteriorated has ceased and fair prices are being paid for this cotton.

Many ryots grumble because of this order telling them to pull up their Cambodia cotton by a certain date. They think they are being defrauded. They see the bolls on their cotton plants and they think they ought to be allowed to keep their plants growing until they have picked these bolls. All these ryots are thinking of is the present, they forget that while they are growing cotton they are also breeding insects. They forget or they do not know that if they keep their plants too long in the ground there will be so many insects attacking the next crop, that they will get less produce and probably less price for their produce in the next season. What they appear to gain this year they will lose next year.

It is, however, the duty of a good Government to look not only at the present but also at the future and to do what is best for all. In this case it is better that a part of kar-pickings should be foregone in order that most of the season-picking should be good rather than that both season and kar-pickings should be alike bad.

The Lloyd Barrage and Irrigation Project.

The Barrage on the river Indus at Sukkur and the Canals Project in connection therewith was formally commenced on 24th October 1923, when His Excellency Sir George Lloyd, Governor of Bombay, presided over a Durbar on the site of the Barrage, and laid a foundation stone which marks the commencement of the Works.

Cost of Works.

The Works when completed will form the greatest irrigation project in the world, and the estimated cost is £12,240,000.

The Barrage.

The Barrage itself will be nearly 1 mile in length and will cost £3,800,000 sterling as against £2,900,000 for the Assouan Dam in Egypt.

The waterway through the gates of the Barrage will provide for a flow of 1,500,000 cubic feet per second. The maximum discharge of the river Thames when in flood is 15,000 cubic feet per second so that the Lloyd Barrage is capable of discharging a volume of water which is 100 times as great as the flow in the river Thames when in flood.

The overall length of the Barrage is 4,925 feet or five times the length of London Bridge, and will contain 66 openings for sluice gates each of 60 feet clear width provided with "stoney" pattern gates each 63′–3″ long, 18′–6″ high and 9 feet wide in the centre, and each weighing 46 tons. The piers between the openings for the gates will be 10 feet wide and the overall length of such piers with cut waters and ease waters will be 73 feet. The piers will carry the high level operating bridge on which will be placed the electrical appliances for operating the gates, such bridge being 29′–6″ wide and with a floor level 62′–6″ above the level of the Barrage floor sill. The piers are lengthened to carry also a road bridge 25′ wide with a road level 39′ above the Barrage sill.

In order to restrict the height of the overhead operating bridge, it has been arranged to give the counter weights balancing the weights of the gates only half the travel of the gates; hence they will have to be double the weight of the gates of 92 tons each.

When the gates are fully raised and the balancing counter weights fully down the bottoms of both will be at the same level and 8 feet above the level of estimated maximum flood of 1½ million cubic feet of water per second passing through the Barrage.

Site of Barrage.

The site of the Barrage has been the subject of much controversy. A former Barrage Scheme provided for its erection on a site just upstream of Bukkur Island at which point limestone rock is found in the river bed, and it was supposed that this would make a good foundation. To avoid dropping into deep gorges it was not possible to make the Barrage in a straight line normal to the river. To follow the high rock—the bed, the Barrage had to be a rough half hexagon, pointing upstream and only the central portion of this hexagon was directly facing the general direction of the river.

This scheme was considered by a Committee of Engineers appointed by the Secretary of State in London, and was abandoned as it had many disadvantages, some of the objections pointed out were as follows:—

(*a*) As the river could not have a normal approach to all sluices of the Barrage, heavy afflux and cross currents would be formed.

(*b*) The level sill of the Barrage sluices would also have obstructed the entrance to the gorges, and the combined effect of these two forms of obstruction might have had a serious tendency to cause the river to break through its banks above Sukkur, find a new course, and desert its present course through the gorges.

(*c*) The so-called rock on which the foundation was to be made was of an inferior honeycombed structure, and was considered a doubtful foundation for a great structure built to hold up a large head of water.

The London Committee pointed out the drawbacks of this site, and suggested that a site be obtained lower down the river for a Barrage to be founded on sand and the present site 3 miles down-stream of the gorges was decided upon.

The floor of the Barrage is designed on the well-known principles of Weirs founded on sand. The piers will be built direct on the Barrage floor consisting of solid masonry 11 feet thick and 80 feet wide laid continuously across the whole river bed.

On the underside of the masonry floor 4 rows of vertical sheet piling will be driven

into the sand and built into the underside of the masonry floor.

This floor will be flanked upstream by an apron consisting of solid bed of masonry 4 feet thick, 40 feet wide and down-stream by a solid bed of masonry 6 feet thick tapering to 4 feet thick and 70 feet wide.

In addition to the 190 feet width of solid masonry provided for the full width of the Barrage, the upstream side of the masonry apron will be protected by a further apron of loose stone pitching 6 feet thick and 60 feet wide and should scour occur in the river bed at the upstream side of this pitching the loose stones will settle down on the scoured bed and pitch it to a slope on the Bell's bund principle. On the down-stream side of the Barrage, scour will be severe where the gates are open, and to provide against this in addition to the masonry floor, masonry apron to a distance of 120 feet from the sluice gates, concrete blocks each weighing 10 tons will be laid on 3 feet of stone pitching, 83 feet wide, and beyond this again an apron of loose stone pitching 6 feet thick for a width of 100 feet, making total protection for 303 feet from the gates.

Regulators.

Immediately above the Barrage on both banks commence the head regulators of the great canals. The gates to the regulators are formed of tiers of 3 steel gates, working in grooves one behind the other. These gates are so arranged that they can be lowered to any desired level so that the water entering the canal from the river will pass only over the tops of the gates thus excluding the bottom water of the river which is heavily laden with silt.

The permanent sill of the regulators stand from 6 to 9 feet above the floor of the Barrage, so that any accumulation of silt in front of these sills cannot enter the canals, but can be drawn through the Barrage sluices and passed down the river.

Canals.

The number of canals to be served will be 10, and the total length of the main canals will be 805 miles, branch canals 766 miles, and distributaries 3,724 miles.

There will be three great canals on the right bank and four great canals on the left bank each with separate head regulators.

The new Rice canals will have a bottom width of 291 feet and top width 330 feet and depth 12¾ feet. It will have a discharge of 12,346 cubic feet per second. This canal has a length of 87 miles with 294 miles of branches and 48 miles of distributaries. For comparison it may be stated that the discharge of the river Thames in flood is 15,000 cubic feet per second; the Suez Canal is 72 feet wide at bed and 202 feet wide at surface, depth 26 feet and length 99 miles. The Manchester Ship Canal is 120 feet wide at bottom and 172 feet at surface and 26 feet deep.

The New Rohri Canal will at the head have a bed width of 253 feet, at surface 290 feet and depth 13 feet. Its length will be 205 miles with 203 miles of branches and 2,100 miles of distributaries and it will have a maximum discharge of 10,250 cubic feet per second. The new supply channel to the Eastern Nara will have a bed width of 350 feet, surface width of 390 feet and its depth 11½ feet with a discharge of 12,200 cubic feet per second.

The 10 canals will have a combined discharge of 46,672 cubic feet per second and the total area commanded will be 8,132,000 acres with 5,900,000 acres of cultivation. The extent of this area may be judged when it is stated that the total area of Egypt is 8,460,000 acres while the total cultivation is 5,400,000 acres.

There will be 202 road bridges over the canals and 169 inspection bungalows will be provided on the canals system.

The crops to be raised will be wheat, rice, cotton, jower and other crops. The proposed rates to e charged for a flow supply from the canals vary from Rs. 2-8 to Rs. 8 per acre per annum (Rs. 1-4-0) for the first 10 years after which there will be slight increase each 10 years upto 30 years.

The final scheme for the Barrage Regulators and Canals was prepared under the direction of Mr. A. A. Musto, C.I.E., M.Inst.C.E., of the Public Works Department who has now been appointed Superintending Engineer of the Barrage Division of the Project. Mr. C. S. C. Harrison has been appointed Chief Engineer for the carrying out of the Project with head office in Karachi.

To provide for the required increase of accommodation at the Port, the New West Wharf Scheme has now been commenced which will provide for additional Wharfage accommodation of 8,000 feet in length for ocean-going steamers. Additional Railway accommodation is also proposed to be provided by the New West Branch of the N. W. Railway with quadruple track 16 miles in length and skirting to the North and West of Karachi to the New West Wharf.

Economics in the West.

Cotton Growing in South Africa.

Mr. G. F. Keatinge, who in conjunction with Sir Henry Dundas carried out an investigation of the cotton-growing possibilities of South Africa on behalf of the Empire Cotton Growing Corporation last winter, takes a favourable view of the prospects. In his report which has been published recently he ventures the opinion that in twenty years' time the cotton crop of the Union may amount to 250,000 bales, with an ultimate extension to 500,000 bales. He is therefore more optimistic than Mr. W. H. Himbury, the General Manager of the British Cotton Growing Association, who, in a paper read by him about a year ago, put the eventual cotton crop of the Union at about 100,000 bales. The present crop is from 5,000 to 6,000 bales.

Mr. Keatinge says that physical conditions over a limited tract are well suited to the growth of high-class cotton. The labour supply is adequate for a fairly rapid development if facilities for transport and marketing and proper supervision and ginneries are provided. He is also of opinion that long staple cotton could be grown successfully in the Transkei. He suggests that a strong commercial corporation should be formed for handling, marketing, and financing the crop with the support of the Union Government and of the Empire Cotton Growing Corporation. He recommends the establishment of an up-to-date ginnery and press at Komatipoort, together with an agency to buy seed cotton outright, or to handle, and market cotton for the farmers on commission. There is no reason why the commission should not pay a profit, but, for the sake of stimulating the growth of cotton, financial assistance should be extended to it for the first few years.

Mr. Keatinge's conclusions are :—

(*a*) There is going to be a large development of the cotton industry in South Africa which the Empire Cotton Growing Corporation can do much to help and expedite, the moment being opportune for such assistance to be offered.

(*b*) If the Corporation decides to associate itself with this imporatnt development, assistance must be given on an adequate scale.

(*c*) To take full advantage of existing opportunities a decision should be reached without delay.

Subsidising of Industry in Switzerland.

The Swiss Government appropriated for the year 1922 more than 50,000,000 francs for subventions to various industries in the country. The reason for this action, according to the official "Commerce Reports" (the organ of the United States Bureau of Foreign Commerce), is that the economic stability of Switzerland depends on the maintenance of certain established industries, and the Government believes that these must, at all costs, be saved from destruction during the present period of depression. It is considered more advantageous than unemployment subsides, which are unproductive and in some ways harmful.

The industries subsidised are the following: (1) watchmaking; (2) milk production; (3) hotel operation; (4) cereal culture; (5) potato growing; (6) stock raising; and (7) the embroidery industry.

In the watchmaking industry an initial subsidy of 5,000,000 francs was granted on December 6, 1921, and an additional 6,000,000 francs on October 12, 1922. The bounty is paid only on complete watches, not exceeding 150 francs in value per piece. During the period since the establishment of the subsidies there has been a decrease in unemployment in the industry and a steadying of foreign trade, which has been attributed largely to the effect of the subsidy.

The most important subsidy, from the standpoint of cost to the Government, is that to the milk industry. It was granted to cover the losses occasioned to producers by the fixing of a price for milk and milk products below the cost of production in order to increase consumption. The total subsidies granted in 1922 amounted to 32⅓ million francs.

The subsidy on the production of cereals is for the purpose of encouraging the cultivation of grain in Switzerland, in order to make the country as nearly independent as possible of outside supplies. A temporary arrangement of price guarantees has been made on the wheat crop through the year 1924 to insure a margin of profit to the farmers, but it is opposed by business interests because a Government monopoly of the grain supply is involved. An endeavour is, therefore, being made to evolve a subsidy satisfactory both to the farmers and to business interests.

French Artificial Silk Industry.

In spite of the rapid growth in recent years of the French artificial silk industry, the output, which is estimated at 1,500 tons yearly,

is far below the consumption, and lately the excess of imports over exports has been steadily increasing. In view of the high prices now quoted for natural silk and the universal taste for luxury, even amongst the middle and working classes, it seems likely that artificial silk mills will have to deal with an ever-increasing demand.

At present the "viscose" artificial silk appears to be more favoured than "Chardonnet" silk. Hitherto many of the artificial silk mills have been located in the South of France, mostly in the Rhone Valley—*e.g.*, Albi, Besançon, Chavanoz (Isére), Flaviac (Ardéche), Vals-les-Bains (Ardéche), Voult-sur-Rhone (Ardéche), Arques-la-Bataille (Seine-Inférieure). The building of a new mill at Castres (Tarn) is nearly finished, and the erection of two mills in Normandy is contemplated. Further, the Société Borvisk Française has just been formed with a capital of 10,000,000f. for the purpose of manufacturing artificial silk and all cellulose products.

In addition to these new enterprises, there is a movement in favour of the extension of the artificial silk industry in the North of France where, up to now, this branch of French activity has been very little developed. In fact the Nord and Pas-de-Calais departments contain all sections of the textile industry with the exception of artificial silk, although it is used largely in their factories. The netmakers of Caudry, the lacemakers and embroiders of Calais and Saint-Quentin, are bound to follow the requirements of fashion and are using artificial silk in increasing quantities. This material is bought either in other departments of France or in Belgium. By establishing additional mills, not only in the neighbourhood of Lyons, but also in Northern France it is hoped to bring prices down. Three companies are now engaged in preliminary work which, if successful, will result in the establishment in the Nord region within two years of three viscose mills. One would be built at Valenciennes by Roubaix manufacturers.

The Société Tubize, Belgian manufacturers of Chardonnet silk, are now looking for a town in Northern France where sufficient labour could be found to operate a new viscore silk mill. A viscose silk factory is also to be built at Gauchey (Aisne).

The Plight of the Cotton Trade.

In an article in the September issue of the *Nineteenth Century*, Sir Charles Macara, Chairman of the Provincial Emergency Cotton Committee, writes as follows on the causes of the present condition of the cotton trade :—

The real causes of the present depression are, first of all, that the cotton industry has been built up largely on overseas trade. England, as already stated, has not only to import the whole of her raw cotton, but after spinning and manufacturing it she has to depend on overseas outlets for over three-quarters of her trade. Thus it is that, while other cotton-manufacturing countries make chiefly for their own requirements, England is dependent on settled and prosperous conditions abroad for taking off four-fifths of her production, and therefore has been singularly unfortunate since the war. India, our best customer, not only found herself with high-priced goods bought at the top of the boom which she has had great difficulty in disposing of, but she has been unable to sell her own products in Europe owing to the war conditions which still prevail; China, our next best customer, has been afraid to give out orders owing to civil war conditions in the interior of the country; Turkey, another great customer of cotton goods, has until now been in a state of war with the Allies for nine years and has been unable to trade freely; and Germany, Russia, and other countries have been in a state of turmoil and have had no chance of doing business on the old lines. Add to this the fact that cotton has been scarce and at a fabulous price, and even now costs nearly twice as much as in pre-war days, and one can understand the difficulties with which the staple trade of Lancashire has been faced.

But on the top of all this there has been a domestic problem which has made things more difficult still, and which, if not solved quickly, threatens to bring the whole industry to ruin. I allude to the senseless competition which has been going on for the past three years among home producers. Instead of facing the situation boldly and refusing to work at a loss, a policy has been adopted of making more goods than demand justified, with the inevitable consequence that forced sales have followed and weak sellers have made it impossible for anything like a fair market price to be maintained. In this way many millions of capital have been squandered, and shareholders, instead of receiving a fair return for the money invested, have, in addition to losing dividends, incurred heavy and increasing losses of capital.

Canadian Trade and Finance.

The World Wheat Situation.

Montreal, September 1st, 1923.—As harvest operations proceed, economic conditions throughout the Dominion rest in the balance pending the crop outcome here and abroad, and wheat, as usual, holds the centre of the stage. More keenly than ever before the Canadian producer keeps in touch with world wheat statistics. A radical readjustment is taking place in the relative importance of wheat producing countries, and this has a vital bearing upon the future of the Dominion. War and post-war conditions and the Soviet experiment have at least temporarily eliminated as large exporters such countries as Russia, Roumania and Bulgaria who collectively used to export nearly one-third of the wheat exported by producing countries. To meet the deficit, the wheat acreage of large producers such as Argentina, Australia and India was noticeably increased. It was the North American continent, however, that really filled the breach. This required a substantial annual expansion of wheat acreage which is strikingly illustrated by the following figures for pre-war acreage, war-peak acreage and acreage at present.

	Pre-war acreage 1909–13	War-Peak acreage 1918–19	Present acreage
United States ..	47,097,000	67,437,000	58,253,000
Canada ..	9,945,000	18,240,000	22,165,000
	57,042,000	85,677,000	80,418,000

As will be seen, the reduction in the acreage of North America from the war-peak has been only 6 per cent, a considerably smaller reduction than might have been expected under the circumstances. In fact, Canada has increased her acreage since 1919 by 22 per cent. Meanwhile, the abnormal demand occasioned by war conditions has passed, and European agriculture has more or less become normal, agriculture, obviously, being less affected by chaotic political and financial conditions than other lines of industry. Present prospects indicate an increase in the wheat production of Europe, not including Russia, as compared with last year's yield, of slightly over one hundred million bushels. Against the increase which is anticipated in Europe, it is now estimated that production in the United States will show a decrease of about seventy-five million bushels as compared with that of the previous year. Outside of the United States and Canada, the important wheat-shipping countries are the Argentine and Australia. The total exportable surplus of these and other exporting countries in the southern hemisphere, harvested early this year, showed no increase. Stocks on hand in North America as of July 1st of this year, as compared with the previous year, show an increase of fifteen million bushels. To summarize, available supplies would appear to indicate an increase as compared with last year of approximately fifty million bushels. It is, however, reasonable to suppose that the demand from Europe will not be much less than was the case last year for the reason that no countries in Europe now figure as exporters of wheat in any quantity, and it is perhaps a fair inference that home-grown wheat, to some extent, will replace imported food products which will be very difficult to obtain on account of existing financial conditions in the larger part of Europe. Great Britain figures most prominently as a wheat importing country, obtaining from abroad annual supplies of approximately two hundred million bushels, an amount equal to the importation of all the rest of Europe, and representing about one-third of the world exports. Production approximates 30 per cent of requirements and cannot be greatly increased.

The Outlook for Wheat.

The estimates given above do not appear to justify the pessimistic outlook for wheat prices which seems prevalent at the present time, but on the other hand they do not indicate that any great improvement may be looked for immediately. There is no doubt that for some time past wheat has been selling at a relatively lower price than almost any staple commodity. It is obvious that this situation cannot continue for any great length of time, and its effect is already clearly seen in the situation in the United States, where the production of maize has shown an enormous increase co-incident with a reduction in the wheat acreage. Where other agricultural products can be grown more profitably they will certainly replace wheat until the price of the latter comes into line with that of other commodities. In a country where consumption of agricultural products approaches or exceeds production, a change from one product to another can more easily take place than in the

case of Canada, which produces a surplus of agricultural products in all important lines. For example, since the United States is a meat importing country, the Fordney-McCumber tariff operates to increase the price of cattle within the United States, as compared with the world price, by the amount of such tariff on cattle. The tariff is inoperative in so far as wheat is concerned because production largely exceeds consumption. The effect of the tariff was therefore to stimulate the raising of cattle, and, of necessity, cattle food, as against the the production of wheat. This situation is one of the factors responsible for increased production of maize as against wheat to which reference has been made above. The tendency plainly in evidence in the United States prior to the war towards a steady reduction and final extinction of export surplus of wheat seems to be again asserting itself.

There are fundamental conditions in this country which would appear to operate to our advantage as a producer of wheat as against other countries. We produce grades which are demanded by millers the world over, and these cannot be duplicated elsewhere. Speaking generally, our Canadian wheat lands are more naturally fertile than corresponding lands in the United States, owing to the length of time the latter were in service before the former. Moreover, for many years to come Canada can continue to press into service large areas of virgin land. In no other country, except the United States, is wheat grown in large quantities under conditions anything like as favourable as those which exist in Canada. Therefore, it would seem that we must continue to hold a dominant position and that the solution of our present difficulties does not lie in arbitrary restriction of production. Such restriction will be brought about by the operation of economic laws in countries less favourably situated in this respect. Moreover, if we look at the situation from the point of view of world consumption, we also find reason for optimism.

Co-operative Marketing of Wheat.

The reaction of the North American wheat industry to the present situation is an urgent demand for co-operative marketing. In the United States a gigantic valorization scheme is being actively discussed. The Farm Bureau Federation has approached the Government with a plan to use the new agricultural credit system to finance the withholding of two hundred million bushels of wheat from the market. This proposal is paralleled in Canada by the formation of wheat pools in the western provinces, following the failure of a compulsory wheat board. It is not our wish to offer suggestions or criticism regarding the feasibility of this plan for obtaining a better price for the total wheat crop. Results will be affected by the manner in which such pools, if established on a large scale, are operated, but the idea suggests itself that the withholding of wheat for a few months might have the effect of increasing prices for those countries or individuals who do not contribute to the pool at the expense of those who do. The physical impossibility of handling out wheat crop within a few months ensure its being marketed abroad over the greater part of the year. Moreover, it must not be overlooked that the southern exporting countries' crop season corresponds to our out-of-crop season. The formation of wheat pools to a certain extent has been based on the idea that prices are usually depressed immediately after the harvest. In this connection an investigation was recently carried out by the Minneapolis Chamber of Commerce covering the thirty year period ending with 1914. The investigation shows that during the period of light shipments, *viz.*, May, June, July and August, the average price of wheat was 4.25 cents a bushel higher for No. 1 Northern, and 4.23 cents higher for No. 2 Northern than during the months of heavy movement, namely, September, October, November and December. The Chamber estimated the average carrying charges, including interest, to be not less than 9 cents per bushel. On this basis, by holding, the farmer would have lost in twenty out of the thirty cases on No. 1 Northern and in eighteen out of the thirty on No. 2 Northern. As stated above, the results obtained will depend largely on the marketing policy pursued, and it is possible that certain economies may be effected as a result of centralized marketing.

Labour's Changing Viewpoint.

In the past, organized labour throughout the world has had very serious misgivings with regard to the speeding up of the productive process by the more intensive application of the principle of division of labour, and by the greater use of labour-saving devices. That this attitude is being modified there seem to be indications, and its modification or abandonment carries with it untold possibilities.

The traditional attitude of labour is not difficult to understand. From the very outset of the industrial revolution it seemed to the worker that such devices as the spinning loom and the steam engine were certain to replace man power, to throw large numbers of men out of work, thus overflowing the labour market and reducing the wages of those who were fortunate enough to succeed in retaining employment at all. He considered it to be in his interest, therefore, to destroy or to oppose the introduction of any such device. Such a viewpoint, in a modified form, has remained right down to the present in the various methods of limiting output on amount of work done in a given time. That this is a fallacy, however, is being realized by certain branches of labour. Those who have not yet adopted this new viewpoint maintain that there is a limit to consumption and that speeding up production causes this limit to be reached sooner, thereby decreasing employment. As stated above, this attitude on the part of labour a century ago was not difficult to understand but that the same viewpoint should be espoused in the twentieth century is more puzzling. It seems perfectly obvious that the introduction of any device which increases output without increasing costs, if on a large enough scale, necessarily raises the purchasing power of the entire community including that of labour itself. Demand is a constantly expanding factor. The most important factor in increasing demand is reduction of cost, but modern commerce has found that demand can be enlarged also by advertising and by education. Certain factions of labour argue that their particular activities should be limited. This is just where the troubles lie. The increase in production would be general if all branches of labour would co-operate, and this would mean lower prices for all commodities. The farmer, for example, would not object to less-than-a-dollar wheat if production had been speeded up in manufacturing industries so that he could buy his clothes, food, and implements at a price proportional with that which he receives for his products. Arbitrary limitation of production can only result in increased costs and must be reflected in higher price levels.

That the principle which we have just enunciated is sound in practice has been strikingly illustrated by such examples of mass production as the Henry Ford operations. The possibility of higher wages, shorter hours and increased output resulting from large scale enterprize and the division of labour is better illustrated by the Ford industry than by any other. What has been accomplished is summed up in the following quotation from Mr. Ford's recent book on his experience in the automobile industry:

"For when were men ever really put out of work by the bettering of the industrial process? The stage-coach drivers lost their jobs with the coming of the railways. Should we have prohibited the railways and kept the stage-coach drivers? Were there more men working with the stage-coaches than are working on the railways? Should we have prevented the taxi-cab because its coming took the bread out of the mouths of the horse-cab drivers? How does the number of taxi-cabs compare with the number of horse-cabs when the latter were in their prime? The coming of shoe machinery closed most of the shops of those who made shoes by hand. When shoes were made by hand, only the very well-to-do could own more than a single pair of shoes, and most working people went barefooted in summer. Now, hardly anyone has only one pair of shoes, and shoe-making is a great industry. No, every time you can so arrange that one man will do the work of two, you so add to the wealth of the country that there will be a new and better job for the man who is displaced. If whole industries changed overnight then disposing of the surplus men would be a problem, but these changes do not occur as rapidly as that. They come gradually. In our own experience a new place always opens for a man as soon as better processes have taken his old job. And what happens in my shops happens everywhere in industry. There are many times more men to-day employed in the steel industries than there were in the days when every operation was by hand. It has to be so. It always is so and always will be so."

Threat of a Coming Ice Age.

Professor Gregory, of Yale University, a delegate to the Science Congress, predicts, says *The Central News*, that in a renewed ice age the North American Continent will disappear up to the great lakes. Scandinavia, Scotland, part of England, and large part of Asia and Siberia will be wiped out and Switzerland will be entirely obliterated. From the Antarctic a large slice of South America including most of *Chili*, will be overrun with ice. New Zealand will suffer, but Australia has nothing to fear.

Notes from United States of America.

Searching Manufacturing Material.

The growing demand of the manufacturers of the United States for material purchased in other parts of the world is illustrated by the latest import figures which indicate that the value of manufacturing material imported in the fiscal year which ended in June, 1923, aggregated nearly 2½ billion dollars, as against an annual average of less than a billion dollars in the years immediately preceding the war. While higher prices are in part responsible for this increase, it is quite apparent that the quantity of manufacturing material coming from abroad constantly increases.

Compilations made by the Trade Record of the National City Bank of New York show that the total value of imports of raw material for use in manufacturing totalled about $1,500 millions in the fiscal year which ended with June 30, while manufactures for further use in manufacturing aggregated about $750 millions. The very highest record made in the pre-war period was $635 millions of raw materials imported and $350 millions of manufactures for further use in manufacturing, so that the record of the fiscal year 1923 is about 2½ times as great in stated value as in the highest pre-war year.

Even this high record of nearly 2½ billion dollars of imports in the fiscal year 1923 does not fully measure the sums paid by the manufacturers for foreign material, for the figures which measure United States imports represent the cost in the foreign countries from which they are sent to the United States. The total cost to the manufacturers when transportation and duty are paid, of the manufacturing material imported in the past decade is approximately $20,000 millions.

The material which the United States draws from other parts of the world is chiefly the product of climatic and labour conditions different from those in the United States. The importations for factory use include rubber, jute, manilla and sisal, raw silk, chiefly from China and Japan; cotton from Egypt; wool from Argentina and Australia; goatskins from India, China, Africa and the Latin American countries; cocoanut, oil and copra; gums from the tropical forests; tobacco, grown chiefly in the tropical and sub-tropical climates, and in addition to these products of the soil and tropical climates it so happens that the minerals and metals imported are also from mines within the tropical or sub-tropical belt.

Manufactures from seventy-five per cent to ninety per cent of United States exports to the tropical countries of the world, and the interchange thus established and maintained between the tropics and the manufacturing section of the United States makes it apparent that the proportion which manufacturing material forms of American imports will continue to increase. The share which raw material for manufacturing forms of United States imports is now practically forty per cent as against 3½ per cent a century ago, ten per cent in 1865, twenty per cent in 1880, thirty-two per cent in 1900, and thirty-five per cent in the year immediately preceding the war; while on the other hand finished manufactures formed in May of the current year forty-two per cent of American exports as against six per cent a century ago, fifteen per cent in 1870, sixteen per cent in 1890, twenty-four per cent in 1900 and thirty-two per cent in the year preceding the war.

"The ability of the United States", adds *The Trade Record*, "to buy the world's raw material and send it back to the producers in manufactured form is due in no small degree to the willingness of capital to co-operate in the interchanges between the great climatic and industrial sections of the world. The census figures of the capital of the manufacturing industries of the country show an advance from $533 millions in 1850 to $44,579 millions in 1919. The stated capitalization of 1919 is eighty-five times as much as that of 1850, while the factory output of 1919 was sixty-five times as much as that of 1850."

Banks on the High Seas.

"The bank on board an ocean liner is a comparatively new institution, but it seems to be making a place for itself," according to *The Literary Digest*. The ocean office of the Farmers Loan and Trust Company on board the Leviathan does business with some 4,000 customers, a larger number than many large banks ashore are called upon to take care of during the week.

There are no ten to three banking hours for the Ocean Bank. The closing hours depend upon when the ship will land its passengers. On the first trip the Leviathan was due to arrive Monday, and the Bank found it necessary in order to take care of the

steady line of customers and provide them with American money, to remain open for business all day Saturday and Sunday, and until late Sunday night. Quote from a statement issued by the Bank, the *New York Times* reads :—

"Aside from 2,500 cabin passengers and a crew of 1,300 served, at specified hours on certain days, the bank is available to second and third class passengers. It is calculated that eighty per cent of the travellers abroad the Leviathan availed themselves of the ship's banking facilities. And that's not all, because the purser's office, the radio, post office, Ritz-Carlton restaurant, the shops aboard the ship, barbers and the manicurists have all made the Farmers Loan office their bank.

The main transactions of the bank are cashing travellers' cheques and drafts under letters of credit, and changing money from one form of currency to another. On the outward trip the latter transactions are mostly confined to exchange of dollars for English and French money, but on the way back the company takes in almost every kind of European currency, for which it pays dollars at rates of exchange received daily by radio from the New York Office of the Trust Company. The Ocean Bank also issues letters of credit and travellers' cheques, which are mostly in demand on the outward-bound voyage.

But changing money and issuing travellers' cheques and letters of credit are only what might be called standard operations. On every trip wireless orders are received from New York, London, and Paris to make payments to passengers, and in one case such a payment was effected within twenty minutes. Another type of transaction must be carried out when passengers aboard the ship want to make telegraphic payments ashore. These are handled by radio in code, through the New York Office.

Although the Ocean Bank does not deal in stocks and bonds, it receives stock quotations which are in great demand from a certain section of the passenger list."

Immigrants and Immigration Law.

The immigrants admitted to the United States for the year ending June 30th last numbered 522,919, and not 357,000 as was supposed, according to statistics just issued by the Immigration Bureau at Washington.

This, however, does not mean that the quota law as such has broken down. It does mean, however, that a loophole in the Immigration Law has been found. The loophole is this : a brief residence in some other country of the western hemisphere such as Canada, or Mexico, qualifies a person for entrance into the United States. According to the records, this loophole has been ingeniously used, and it is believed that Congress will make a determined effort to stop this leakage in the Immigration Law.

A striking feature of the immigration report is that portion dealing with the callings of the new immigrants. Of the total only 83,552 were classed as labourers, while 106,213 were skilled workers and 191,585, including women and children, were listed as having no occupation. Last year's immigration exceeded that of the previous year by 213,363, whereas the number who departed from the United States fell from 198,712 in 1921-22 to 81,450 in 1922-23, the net increase of the immigrant population of the United States being 110,844 in 1921-22 as against 441,469 in 1922-23.

Electrification of French State Railways.

According to a report by Mr. J. R. Cahill, Commercial Counsellor to the British Embassy in Paris, the electrification of main lines occupies a prominent position in French Railway development. The present programme of electrification applies mainly to the Southern(Midi), the Paris-Orleans, and the Paris-Lyons-Mediterranean systems, a total length of 8,839 kilometres (one-third of the total length of the French systems). On the Southern Railway electrification of the line from Tarbes to Bayonne (165 kilometres) and to Dax is nearly completed. The stations supplying power for this line are in the Pyrennees. The Paris-Orleans, which electrified its suburban lines about twenty years ago, is about to electrify the Paris-Orleans-Vierzon section with the Bretigny-Dourdan branch (230 kilometres) as the first part of its programme, covering 3,300 kilometres. Power will be mainly obtained from the river Dordogne. The Paris-Lyons-Mediterranean Railway proposes to electrify 326 kilometres in the neighbourhood of Paris and 3,000 in the region of the Rhone, which river will supply its power. The estimated cost of these schemes is put at over five milliard francs (about £72,000,000 at the current rate of exchange). Uniformity of system for the whole country is being enforced ; three-phase 50 cycle current will be supplied to the sub-stations in direct current at 1,500 volts.

Books in Brief.

SHORT REVIEWS OF RECENT BOOKS.

The Control of Industry.

By D. H. Robertson, M.A., Fellow and Lecturer of Trinity College, Cambridge, with an introduction by J. M. Keynes, M.A., C.B., Fellow of King's College, Cambridge. Messrs. Nisbet & Co., Ltd., London and Cambridge University Press, Cambridge. Price 5*sh.* net.

This is an excellent and suggestive book. Mr. Robertson deserves to be warmly congratulated on it. Industrial development in India is taking root slowly but surely. The underlying principles of modern industry in advanced countries should be grasped by capitalists here, if they mean to succeed in their endeavours. For that purpose Mr. Robertson's little book ought to prove highly useful. It is crammed full with succinct information. We heartily commend it.

Development of Empire Resources.

The development of the resources of the British Empire has been greatly advanced by the work of the Imperial Institute, an account of which was recently given in the Report on Operations (Bulletin No. 1 of 1923). Further examples of this important work are contained in the current issue (No. 2) of the same Bulletin, just published by Mr. John Murray. A full account is given of the lignite deposits of the Southern Provinces of Nigeria, which were discovered during the Mineral Survey carried out under the auspices of the Institute. The deposits exist over a considerable area, some being favourably situated for transport. A detailed study of the lignite in the laboratories of the Institute showed that it was of satisfactory composition and calorific value. It is quite suitable for briquetting, and briquettes used as fuel in firing trials in railway engines and steamboats in Nigeria have proved satisfactory. Another article summarizes the investigations conducted at the Institute under the Ceylon Rubber Research Scheme. Particulars are given of the results of tests of a large number of specimens, prepared in Ceylon by different methods, with a view to ascertaining the mode of preparation best suited to the needs of the manufacturer. Other subjects of interest referred to are Indian worm-seed as a source of the drug santonin; a new essential oil obtained from a Western Australian plant; and the results of practical pottery trials with Australian clays. There is also an interesting illustrated article on the trees of the Gold Coast. The value of a number of Gold Coast and other Colonial timbers is being investigated at the Institute with the advice of a Committee, which includes representatives of the timber trades and industries of this country.

Acknowledgment.

Flora of the Presidency of Madras. By J. S. Gamble, Part V. *Ebeneceae to Scrophulariaceae.* Published under the authority of the Secretary of State for India in Council by Messrs. Adlard & Son, and West Newman, Ltd., Bartholomew Close, London, E.C. Price Rs. 6—8—0. Through the Secretary, Industries and Commerce Committee, Bangalore.

Topics in the Journals.

(1) The Mysore University Magazine, September 1923.—A Visit to Australian Universities II, by H. J. Bhabha, M.A.

(2) The Bengal, Bihar and Orissa Co-operative Journal, October 1923.—Co-operative marketing in the Bombay Presidency.

(3) International Review of Agricultural Economics, July-September 1923.—The Central Co-operative Banks of the Rural and Agricultural Co-operative Societies in Germany.

(4) Lucknow University Journal, September 1923.—The Humanization of Economics by Radha Kamal Mukerji.

(5) The Asiatic Review, October 1923.—Indian Tariff Policy by Sir Cambell Rhodes, C.B.E.

(6) The Journal of the Ministry of Agriculture for October 1923.—The Cultivation of Sugar Beet.

The Travancore Government have sanctioned 25 acres of land from the Reserved Forest of Tenmalai for the construction of the factory and the other buildings of the South Indian Match Factory.

The Mysore Economic Journal

A Monthly Periodical devoted to the Discussion
of all Economic Topics of Interest

Vol. IX SEPTEMBER 1923—SUPPLEMENT No. 9

Mysore Local Self-Government Conference, 1923.

BRIEF REPORT OF PROCEEDINGS.

The following is a brief report of proceedings of the Local Self-Government Conference, held at Bangalore on the 24th, 25th, 26th and 27th April 1923 :—

The holding of a Local Self-Government Conference at Bangalore was sanctioned in the following order of Government :—

Order No. L. 5395-5457—Ml. 162-22-1, dated 27th January 1923 :—Five years have elapsed since the Local Self-Government Scheme came into operation and a very important change has been introduced into the functions of the Local Bodies by tacking on economic work to them and under the Reforms Scheme, further powers to deal with local subjects, which are now brought before the Representative Assembly, are proposed to be given to them. The question of co-ordinating and improving the working of Municipal Councils and Local Boards, and of improving their finances and placing them on a satisfactory footing and other questions of vital importance to the Local Bodies have to be tackled with in the immediate future.

2. It was at first suggested that the Local Bodies should take the initiative in the matter and convene a Conference to discuss the various questions affecting the progress and development of Local Self-Government and to hold a thorough examination of the Local Self-Government Scheme. The Bangalore City Municipal Council passed a resolution agreeing to hold a Conference, but they have not as yet taken any definite action in the matter.

3. Government consider that the work of examining the Local Self-Government Scheme and formulating proposals in keeping with the proposed Constitutional Reforms should be expedited and that orders should be passed before the Constitutional Reforms are introduced into the State. They are accordingly pleased to direct that to go into all questions connected with the development of Local Self-Government in the State, a Conference be summoned by Government to meet in Bangalore in the 2nd or 3rd week of March 1923, and to be presided over by the Second Member of Council. The Presidents of the City and Town Municipal Councils, non-official Presidents of District Boards and non-official Vice-Presidents of Taluk Boards, the Deputy Commissioners, some selected Heads of Departments and a few other non-official gentlemen will be invited to attend the Conference.

T. E. Jeyarama Aiyar,
Secretary to Govt., Rev. Dept.

The *personnel* of the Conference was thus fixed in Government Order No. 6344-6406, dated 17th March 1923.

In modification of the order read above, Government are pleased to direct that the Local Self-Government Conference be held in the third week of April 1923 and that the number of officers of Government and non-official gentlemen to be invited to take part in the Conference be limited to 125 consisting of :—

1. City Municipal Councils.—
   Presidents 2
   Vice-Presidents 2
2. Town Municipal Councils.—
   Non-official Presidents 3
   Do Vice-Presidents (excepting those of Kolar, Tumkur, and Chikmagalur) 24
3. Minor Municipal Councils.—
   Non-official Vice-Presidents of two Minor Municipal Councils in the Mysore District and of one such Municipal Council in each of the other districts .. 9

4. District Boards.
   Presidents of the District Boards of Bangalore, Kolar, Tumkur, Mysore and Hassan 5
   Non-official Vice-Presidents of District Boards. 8
5. Taluk Boards.—
   Non-official Vice-Presidents of three select Taluk Boards in the Mysore District and 2 in each of the other districts. .. 17
6. Village Panchayets.—
   Select representatives of 2 Village Panchayets in the Mysore District and of one in each of the other Districts .. 9
7. Delegate from the Sanitary Board, Kolar Gold Fields .. 1
8. The following Heads of Departments, Secretaries to Government and Deputy Commissioners of Districts. 20
   Revenue Commissioner.
   Chief Secretary to Government.
   Revenue Secretary to Government.
   General Secretary to Government.
   Senior Surgeon and Sany. Commissioner.
   Inspector-General of Education.
   Director of Industries and Commerce.
   Chief Engineer for Roads and Buildings.
   Chief Engineer for Irrigation.
   Director of Agriculture.
   Live-Stock Expert.
   Superintendent of Sericulture.
   Director of Public Health Institute.
   Registrar of Co-operative Societies.
   Conservator of Forests.
   Deputy Commissioners of Bangalore, Mysore, Kolar, Hassan and Tumkur.
9. Selected Non-official Gentlemen not exceeding 25

2. One of the Assistant Secretaries to Government will be deputed to attend to the work of the Conference as its Secretary to whom all communications on the subject should be made.

3. The date on which the Conference will be opened and the subjects that will be placed before it for discussion will be communicated to the members in due course.

4. Non-official members of Local Bodies including Village Panchayets will be paid travelling allowances at the rates admissible to them under the rules framed under the Municipal Regulation or under the Local Boards and Village Panchayets Regulation.

Officers of Government invited to the Conference will draw travelling allowance as for journeys performed by them on duty.

Other invitees to the Conference will draw travelling allowance at the following rates :

Journeys by rail—	Double 2nd Class.
Road journeys—	Four annas per mile.
Daily batta—	Rs. 3.

5. The expenses of the Conference, except as regards the travelling allowance due to the Government Officers and the charges on account of printing, will be borne by the Local Bodies in proportion to their incomes.

T. E. Jeyarama Aiyar,
Secy. to Govt., Rev. Dept.

As indicated in paragraph 2 above, Mr. D. C. Subbarayappa, B.A., B.L., Assistant Secretary to Government, was placed on special duty in connection with the Conference from the 5th March 1923 to 14th May 1923. (*Vide* O. M. No. 4512—C.B. 146-22-4, dated 5th March 1923 and G.O. No. 5573—C.B. 146-22-9, dated 13th June 1923.)

The following additions and alterations were made in the above list :

Non-official Presidents of the District Boards of Bangalore, Kolar and Hassan were substituted for Presidents of the District Boards of Bangalore, Kolar, Tumkur, Mysore and Hassan under item No. 4.

The Financial Secretary to Government, the Deputy Director of Agriculture, and the Superintendent of Civil Veterinary Department were added under item No. 8.

The following gentlemen were invited as delegates to the Conference :—

List of Invitees.

I. City Municipal Councils.

Presidents.

Bangalore	1. Mr. Ananda Rao Sirsi, B.A., LL.B.
Mysore	2. Dewan Bahadur Mr. C. Srikantesvara Aiyar, B.A., B.L.

Vice-Presidents.

Bangalore	3. Mr. B. Abdur Rahmon, B.A.
Mysore	Vacant.

II. Town Municipal Councils.

Presidents.

Kolar	4. Mr. G. Girimaji Rao.
Tumkur	5. ,, K. Ranga Iyengar, B.A., LL.B.
Chikmagalur	6. ,, S. Venkataramaiya, B.A., LL.B.

Vice-Presidents.

Chennapatna	7. Mr. C. N. Ramachandra Rao.
Dodballapur	8. ,, D. Kongadiappa.
Chikballapur	9. ,, C. Narayanaswami Chetty.
Sidlaghatta	10. ,, S. Hampiah.
Bowringpet	11. ,, A. Raju Mudaliar.
Mulbagal	12. ,, Mohammed Yasin Sab.

Chintamani	13.	Mr.	Syed Ahamed Saheb.
Sira	14.	,,	Surappa.
Maddagiri	15.	,,	S. Shama Sastry.
Gubbi	16.	,,	G. Murigappa.
Tiptur	17.	,,	Nanjesha Gowda.
Nanjangud	18.	,,	K. Venkatasamaiya, B.A., B.L.
Seringapatam	19.	,,	Veene Rangaswami Iyengar.
Chamarajnagar	20.	,,	T. Venkatasamaiya.
Hassan	21.	,,	Mahomed Raza.
Holenarsipur	22.	,,	B. Anantharama Iyengar.
Shimoga	23.	,,	U. Subbaraya Naik.
Shikaripur	24.	,,	S. Srinivasa Dikshit.
Sagar	25.	,,	A. Narasimha Iyengar.
Birur	26.	,,	K.T. Satyanarayana Setty.
Tarikere	27.	,,	A. Venkataramaiya.
Chitaldrug	28.	,,	Jeevanna Rao.
Davangere	29.	,,	T. M. Onkarappa.
Harihar	30.	,,	H. M. Chennabasavaiya.

III. Minor Municipal Councils.

Bangalore Dist.	31.	Mr.	Abdul Hamid Khan, Sarjapur.
Kolar ,,	32.	,,	L. Vema Reddy, Malur.
Tumkur ,,	33.	,,	D. Seetharamaiya, Turuvekere.
Mysore ,,	34.	,,	M. N. Nagendraiya, Mandya.
	35.	,,	H. Krishna Sastry, Krishnarajpet.
Hassan ,,	36.	,,	Venkataramaiya, Chennarayapatna.
Shimoga ,,	37.	,,	Rustum Ali Khan, Honnali.
Kadur ,,	38.	,,	Rangarajaiya, Mudgere.
Chitaldrug ,,	39.	,,	N. Ananda Thirtha Rao, Chellakere.

IV. District Boards.

Presidents.

Bangalore		Mr.	B. Abdur Rahmon (comes under No. I).
Kolar	40.	,,	C. B. Gopala Rao.
Hassan	41.	,,	N. S. Nanjundaiya.

Vice-Presidents.

Bangalore	42.	Mr.	B. Oosman Khan.
Kolar	43.	,,	D. Venkatesaiya, B.A., B.L.
Tumkur	44.	,,	H. Venkataramaiya, B.A., B.L.
Mysore			Vacant.
Hassan	45.	,,	H. V. Rangaswami, B.A., LL.B.
Shimoga	46.	,,	C. Subba Rao, B.A., B.L.
Kadur	47.	,,	C. Srinivasa Rao.
Chitaldrug	48.	,,	M. Ananthaiya Setty.

V. Taluk Boards.

Vice-Presidents.

Bangalore	49.	Mr.	B. Srinivasa Iyengar, Anekal.
	50.	,,	B. M. Munisamappa, Bangalore.
Kolar	51.	,,	H. Srinivasa Rao, Malur.
	52.	,,	Krishnamurthi Achar, Mulbagal.
Tumkur	53.	,,	Singri Nanjappa, Tiptur.
	54.	,,	Sanjivappa of Sompur, Koratagere.
Mysore	55.	Mr.	T. Krishna Rao, Mysore.
	56.	,,	H. V. Rangaswamy Iyengar, Heggaddevankote.
	57.	,,	K. N. Subbaiya Chetty, Malavalli.
Hassan	58.	,,	B. C. Anantharamaiengar, Chennarayapatna.
	59.	,,	Bellur Nanje Gowda, Manjarabad.
Shimoga	60.	,,	Nadig Madhava Rao, Kumsi.
	61.	,,	Srinivasa Udupa, Nagar.
Kadur	62.	,,	Medkere Naik, Tarikere.
	63.	,,	H. Hutcha Rao, Koppa.
Chitaldrug	64.	,,	Chinnobiah, Chitaldrug.
	65.	,,	Gurusiddappa Basappa, Davangere.

VI. Village Panchayets.

Bangalore	66.	Mr.	S. Dasappa, Sondekoppa Nelamangala Taluk.
Kolar	67.	,,	Ramegowda, Kamasandra, Bowringpet Taluk.
Tumkur	68.	,,	Suryanarayana Rao, Kolala, Tumkur Taluk.
Mysore	69.	,,	Biram Khan Sab, Kiragaval, Malavalli Taluk.
	70.	,,	B. Ramanna, Kikkeri, Krishnarajpet Taluk.
Hassan	71.	,,	G. Selva Pillai, M.A., LL.B. Gorur, Hassan Taluk.
Shimoga	72.	,,	Nagappa Bair, Tallur Panchayet, Thirthahalli Tk.
Kadur	73.	,,	Mande Patel Manjegowda, Banakal Panchayet.
Chitaldrug	74.	,,	Sowcar Surappa, Maradihalli, Hiriyur Taluk.

VII. Delegate from the Sanitary Board.

Kolar Gold Fields	75.	Mr.	J. D. O'Donnell.

VIII. Heads of Departments, Etc.

Revenue Commissioner	76.	Mr.	K. Chandy, B.A.
Chief Secretary to Government	77.	,,	K. Matthan, B.A.
Financial Secretary to Government	78,	Rajakarya Prasakta Mr. M. N. Krishna Rao, B.A.	
Revenue Secretary to Government	79.	,,	T. E. Jeyaram Iyer, B.A., B.L.
General Secretary to Government	80.	,,	G. Aravamudu Iyengar, B.A., B.L.
Senior Surgeon and Sanitary Commissioner	81.	,,	H. B. Mylvaganam, F.R.C.S.
Inspector-General of Education	82.	,,	C.S. Balasundaram Iyer, B.A.
Director of Industries and Commerce	83.	,,	P. G. D'Souza, B.A., B.L.
Chief Engineer for Roads and Buildings	84.	,,	H. D. Rice, M.I.C.E.
Chief Engineer for Irrigation	85.	,,	J. Bhore, A.M. I.C.E. etc.
Director of Agriculture (Acting)	86.	,,	H. V. Krishnaiya, B.A., F.C.S.
Deputy Director of Agriculture	87.	,,	A. K. Yegna Narayana Iyer, M.A.
Superintendent, Civil Veterinary Department	88.	Major J. W. Simpson.	
Live-Stock Expert	89.	Mr. W. Davison, B.S.A.	
Superintendent of Sericulture	90.	,,	N. Rama Rao, B.A., B.L.

Director, Public Health Institute	91. Mr.	A. K. Pani, L.M., & S., D.P.H., etc.
Registrar of Co-operative Societies	92. ,,	K.H. Ramiah, B.A. Bar-at-Law.
Conservator of Forests	93. ,,	B. V. Rama Iyengar, B.A.
Deputy Commissioner, Bangalore District	94. ,,	B. Venkoba Rao, B.A.
Deputy Commissioner, Kolar District	95. ,,	S. Hiriannaiya, M.A., B.L.
Deputy Commissioner, Hassan District	96. ,,	K. Mylar Rao, B.A., B.L.
Deputy Commissioner, Mysore District	97. ,,	B. Ramaswamaiya, B.A., B.L.
Deputy Commissioner, Tumkur Dist.	98. ,,	Md. Zahiruddin Mecci, B.A.

IX. Non-Official Gentlemen.

99. Dewan Bahadur Mr. K. P. Puttanna Chetty, C.I.E.
100. Mr. D. V. Gundappa.
101. ,, B. K. Garudachar.
102. ,, Karnick Krishnamurthi Rao.
103. ,, Mohamed Abbas Khan.
104. ,, P. M. Basappa.
105. ,, P. Murugesam Pillai.
106. Rao Saheb Mr. H. Chennaiya.
107. Mr. R. Gopalasami Iyer.
108. ,, S. Srikantaiya, B.A., B.L.
109. ,, Tubagere Nanjappa.
110. ,, B. V. Ramaswamy Chetty, B.A.
111. ,, Abdul Khuddus.
112. ,, C. Narasimhaiya, B.A., B.L.
113. ,, Amble Anniah Pandit.
114. ,, Mohammed Sait.
115. ,, B. Narasinga Rao.
116. ,, Devoji Rao.
117. ,, T. Srinivasachar.
118. ,, M. G. Shama Rao.
119. ,, S. Venkatesaiya, B.A., B.L.
120. ,, Malali Venkataramaiya.
121. ,, S. R. Balakrishna Rao, B.A., B.L.
122. ,, H. G. Basavappa.
123. ,, C. Vasudeva Rao.
124. ,, Jade Subba Rao.
125. ,, C. Chennakesavaiya.

Subsequently, the following gentlemen were selected as additional Members :—

1. Mr. Purushottama Ananda Giri Gosai.
2. ,, H. Rangaswamy Iyengar.
3. ,, E. Krishnappa.
4. ,, H. Narayana Rao.
5. ,, Khaja Mohammed.
6. ,, Lakshmikanta Bhatta.
7. ,, A. Natesa Mudaliar.
8. ,, G. H. Krumbiegel.
9. ,, C. Hayavadana Rao, B.A., B.L.
10. ,, C. Krishna Rao, B.A., B.L.

In addition to the above, the following officers of Government and leading citizens of Bangalore including the Members of the City Municipal Council of Bangalore and the local Members of the District Board of Bangalore were invited to be present on the opening day :—

1. Sir M. Visvesvaraya.
2. Rajamantra Pravina Dewan Bahadur Mr. P. Raghavendra Rao, B.A., B.L.
3. ,, K. R. Srinivasa Iyengar, M.A.
4. ,, D. K. Darasha.
5. ,, D. Srinivasa Iyengar, B.A.
6. ,, T. Satyaraj Chetty, B.A.
7. Rajadharma Pravina Mr. K. S. Chandrasekhara Aiyar, B.A., B.L.
8. ,, R. B. Plumer.
9. ,, B. Subbanna.
10. ,, B. Nagappa, Bar-at-Law.
11. ,, K. Sankaranarayana Rao, M.A., B.L.
12. ,, V. R. Thyagaraja Aiyar, M.A.
13. ,, R. Ranga Rao, B.A., B.L.
14. ,, A. Subramanya Iyer, B.A.
15. ,, G. B. Heblikar, B.A., LL.B.
16. ,, S. G. Sastry, B.A., etc.
17. ,, B. Jayaram.
18. ,, D. B. Ramachandra Mudaliar.
19. ,, B. Puttaiah, B.A.
20. Lieut. Col. B. Chamaraj Urs.
21. Mr. P. F. Bowring.
22. ,, K. V. Anantaraman, B.A.
23. Rao Bahadur Mr. M. Shama Rao, M.A.
24. Rajamantra Pravina Rao Bahadur Mr. T. V. Armugam Mudaliar, M.B. & C.M.
25. ,, M. Chengiah Setty, B.A.
26. Rajakaryaprasakta Rao Bahadur Mr. D. Shama Rao.
27. ,, T. Paramasiva Iyer, B.A.
28. ,, M. G. Rama Rao, B.A.
29. ,, K. Srinivasa Rao.
30. ,, S. Cadambi, B.A., L.C.E.
31. Rajasabhabhushana Rev. Father A. M. Tabard, M.A., M.B.E.
32. Mr. B. N. Vijayadeva, M.A., Bar-at-Law.
33. ,, G. Paramasivaiya, B.A., B.L.
34. ,, M. Ramachandra Rao, B.A., B.L.
35. ,, C. V. Narasimha Iyengar, B.A., B.L.
36. ,, B. Chinnasami Chetty.
37. ,, B. V. Krishna Iyengar.
38. ,, W. H. Hanumanthappa.
39. ,, M. Ramachandra Rao Sindhe.
40. ,, Myakala Mallaiah.
41. ,, D. Adeppa.
42. ,, J. E. Narasinga Rao.
43. ,, V. S. Tiruvengadasami Mudaliar.
44. ,, H. Krishnappa.
45. ,, H. V. Chandrasekharaiya, B.A., B.L.
46. ,, M. Raghavendra Rao.
47. ,, P. Subbarama Setty.
48. ,, J. R. Isaac, B.A., M.B.E.
49. ,, S. Venkataranga Iyengar.
50. ,, S. Venkatarama Iyer.

51. Rev. W. H. Thorp, B.A.
52. Mr. S. Venkatachala Iyengar, B.A., B.L.
53. ,, G. Siddaveerappa.
54. ,, Yele Channappa.
55. ,, Yejaman Basappa.
56. ,, K. Subbaraya Chetty.
57. ,, Syed Nasaruddin Mohammed Razvi.
58. ,, S. K. Narasimhaiya.
59. Rao Saheb Mr. Venkatasami Naidu.
60. Mr. K. Ponnaiah, B.A.
61. ,, P. Sankariah Setty.
62. ,, B. T. Kesava Iyengar, B.A.

Subjects for Discussion.

The following was the agenda of subjects proposed for discussion at the Conference :—

I. Control and Supervision.

Necessity for proper co-ordination of work under the Local Self-Government Scheme.

(a) Appointment of a Board of Local Self-Government with the Member of Council in charge of Local Self-Government as President.

(b) Appointment of a separate Commissioner of Local Self-Government

II. Constitution.

(a) Revision of the maxima and minima now fixed for the strength of District Boards, Taluk Boards and Village Panchayets.

(b) Principle of direct election to District Boards to be introduced in place of indirect representation through Taluk Boards.

(c) Extension of franchise to women.

(d) Whether the representation of Municipalities in District Boards is necessary.

(e) Modification of franchise qualifications for the various Boards.

(f) Relation of District Boards to Municipalities (City, Town and Minor).

(g) Jurisdiction of Taluk Boards with reference to Taluk and Sub-Division areas.

(h) Constitution of separate Sub-Division Boards.

III. Enlargement of the Powers and Duties of Local Bodies.

1. Enlargement of powers of sanction of original civil works and repairs.

2. Drinking water wells. How to control expenditure and how to secure speedy completion of works.

3. Power to pass resolutions on questions connected with the general administration of the District under Section 12 of the Local Boards Regulation and power to dispose of Local Subjects which were being brought up for discussion till now before the Representative Assembly.

4. Relation of Taluk and District Conferences with District and Taluk Boards.

5. Local Boards and Economic Development Work with special reference to encouragement of industries by loans or otherwise.

6. Relation of Local Bodies to Malnad Improvement Committees and the abolition of the latter.

7. Control of primary education by Local Bodies and enactment of a separate Education Act.

8. Education Cess and amending the Regulation on the subject.

IV. Staff.

(a) Recruitment and prospects of Local Fund and Municipal Establishments and their correlation with the Revenue and other services.

(b) Relationship of local administration with the Medical and Sanitary services.

(c) Entertainment of a separate Engineering Establishment for Local Bodies.

V. Finance.

Revenue :

(a) Improvement of the resources of Local Boards and Municipalities.

i. Mohatarfa.
ii. Profession tax.
iii. Pilgrim tax.
iv. Examination of the system of levy of octroi duties.
v. Terminal tax.
vi. Levy of a tax upon arms, hides, etc.
vii. Surcharge duties in respect of excise.
viii. Levy of a tax upon cattle brought for sale at the Jatras.
ix. Sheep tax.
x. Division of Jatra revenues between District Boards and the Muzrai Department.
xi. Special cesses.

(b) Arrangements necessary for the collection of revenue.

Expenditure :

i. Contributions towards the cost of primary education.
ii. Contributions by Local Bodies for services such as Medical, Sanitary, Veterinary and Agriculture and Central Audit.

VI. Village Panchayets.

i. Revision of the constitution of Village Panchayets and their relations to Village Improvement Committees.
ii. Suggestions for the improvement of the working of Village Panchayets.
(a) Village Panchayets to be invested with power to dispose of civil suits of small value.
(b) Amalgamation of Tank Panchayets with Village Panchayets.

iii. Proper registration of births and deaths and amendment of the Regulation for the registration of vital statistics.
iv. Revision of Sanitation rules as applicable to villages and Minor Municipalities.
v. Compulsory vaccination
vi. Rules for the laying out of new villages or extending existing villages.
vii. Maintenance of avenue trees.

VII. Municipalities.

1. Working of the Scheme of Minor Municipalities and converting them into Town Municipalities or Village Panchayets.
2. Rules for Town Planning operations.
3. Principles for the levy of tolls and distribution of toll revenue among Municipalities and Local Boards.
4. Exemption of Municipalities from payment of penalty to Government for agricultural lands taken up for house building purposes.

VIII. General.

Relation of Deputy Commissioners, Sub-Division-Assistant Commissioners and Amildars with the administration of Local Boards and Municipalities.

IX. Supplemental Subjects.

1. Establishment of Village Panchayets and Municipalities in Inam Villages and Jaghirs.
2. Election of Presidents of Municipal Councils by plebiscite instead of by Municipal Councils.
3. Provision in the Municipal Regulation for the beautification of cities and towns.
4. Amending the Municipal Regulation for assuming control over the construction of buildings and setting apart blocks for residential quarters.
5. Municipal trading.

In addition to the subjects referred to above, the following 4 out of the 15 subjects proposed by Mr. Karnick Krishnamurthy Rao of Bangalore were also accepted for inclusion in the agenda :—

1. Re-election to be ordered in the case of irregularities
2. President of District Board to be the President of Taluk Boards and Municipalities.
3. Reduction in the rates of Travelling Allowance admissible to Local Board Members, Presidents and Vice-Presidents.
4. Mohalla Committees in Town and City Municipal Councils.

To facilitate discussion, notes on all the above subjects had been prepared both in English and Kannada and circulated previously to the Members.

First Day's Proceedings, 24th April 1923.

The proceedings of the Conference began precisely at 12 Noon on the 24th April 1923 in the Daly Memorial Hall and Mr. A. R. Banerji, M.A., C.S.I., C.I.E., Dewan of Mysore, opened the Conference with the following remarks :—.

Dewan's Opening Remarks.

Gentlemen,— It gives me great pleasure to be present here this afternoon and to perform the pleasing function of opening the second Local Self-Government Conference in the State. As you may be aware, it was eight years ago that the first gathering of the representatives of the Municipalities and Local Bodies was organized by the City Municipal Council, Mysore, under the distinguished patronage of His Highness the Yuvaraja, who graciously opened the Conference on the 28th June of that year. It was presided over by Rajasabha Bhushana Dewan Bahadur K. P. Puttanna Chetty, C.I.E., the then Honorary President of the Bangalore City Municipality, whose presence here to-day is a source of immense satisfaction to us. He combines in himself in a unique manner the long experience of a bureaucratic official who, in the olden days, controlled local institutions as well as the unfettered experience of a public-spirited non-official worker in the large field of civic and social progress. I am sure his presence at this Conference will be of great help to you in your deliberations.

In this connection, I cannot omit to refer to the sad loss that the cause of Local Self-Government in Mysore has sustained by the untimely death of Mr. Subbiah, the first non-official President of the Bangalore District Board ; in fact, the first non-official worker who secured popular confidence and election to that high and dignified office.

When the last Local Self-Government Conference was held, the Government had before them two important reports submitted by the Special Committees appointed—one on the subject of general re-organization and development, and the other on the subject of local finance. After over two years' discussion, the Mysore Local Self-Government Scheme was sanctioned in November 1916, and both the Local Bodies as well as the Municipalities are working under the two amended Regulations subsequently passed consolidating the law on the subject as then liberalized and revised. The main lines of advance then adopted were the strengthening of the elective

element in Municipal and Local Boards, enlargement of their powers and functions, increasing their financial resources and rendering the Local Bodies real and responsible agents in the administration of their own local affairs. Two important sources of revenue, Local Funds-General and Mohatarfa, were assigned to the District Boards thereby adding over 50 per cent to their normal resources. It may be within your recollection that, as Member in charge of the Local Self-Government portfolio, I had the honour of putting these important measures through the Legislative Council during the summer session of 1917. I have watched with great interest the progress of the scheme during the past six years and I have also had the opportunity of getting into closer touch with both Municipalities and District Boards during my recent tours in the Districts. I may, therefore, claim with your indulgence, some knowledge of the local conditions and your difficulties and also the privilege of indicating to you the shortcomings as your well-wisher and friend.

It is needless for me to point out that this is the most opportune moment for holding another Conference, as we stand to-day on the threshold of important constitutional developments In my announcement at the last Dasara Session of the Representative Assembly, I indicated how, under the altered constitutional arrangements, it is contemplated that the discussion of local subjects should be relegated to the District Boards who will thus be regarded as the primary guardians of local interests within their jurisdiction. The economic developments within their respective areas have already been made an obligatory function of Local Boards and Municipalities, and the necessary amendments have also been made in the Regulations. Under section 12 of the Local Boards Regulation, the District and Taluk Boards have been given the statutory power to record resolutions on matters of public interest for the consideration of Government. These enlarged functions have not been exercised to any appreciable degree till now, but the proposed transference of discussion of local subjects introduces a very important change of policy, and I am sure that you will carefully go into the matter and be able to suggest subsidiary arrangements that may be necessary to make the District Boards real District Councils in the truest sense of the term. The re-organization of the District and Taluk Conferences and the correlation of these Conferences with the Taluk and District Boards are also matters of an allied nature requiring very careful examination. You have before you a very formidable bill of fare and you will not expect me to refer to all the items or to make any very elaborate survey of the past and indicate at length the problems of the future. This agreeable task will fall on the worthy shoulders of my learned colleague, Mr. Mir Humza Husein, Second Member of Council, who will preside over your deliberations, and I am sure that, with his experience and wide knowledge of the several problems relating to the scheme, he will be able to guide your discussions with his usual ability and practical commonsense.

At the time when the Local Self-Government Scheme was inaugurated, Government had to make the admission that the Taluk Boards and Unions had exercised only consultative functions and served no useful purpose in the rural board administration of the State. The District Committees were entirely official. In fact, Local Bodies were unimportant sub-divisions of Departments of Government under the control of local officers, who did not devote much time to such work. As regards the Municipalities also, a majority of them were not established under the Statute and were left to get on as best as they could; even the representative principle was lacking in the constitution of those which were established under the Municipal Regulation of 1906.

The great Rangacharlu in his address to the Representative Assembly, soon after the Rendition, stated, "real education for Self-Government has only to be acquired by the practical exercise of representative functions and responsibilities," and he even went further by laying down that it will be proper if all the members of the Boards are elected by the people. Sir K. Seshadri Iyer, in his famous minute dated 23rd February 1892, indicated the principle that advance in the art of administration of local affairs can only be step by step. He said, as Local Bodies become more and more fit, powers of control and check over them which were then necessarily reserved in the hands of the District Officers will be gradually relaxed or eventually transferred to the Bodies themselves. This dictum was, however, not allowed in practice. The Regulation of 1902 that followed was considered by the Committee of 1914 to be too complex and still retained considerable amount of official control. At that time, even the Dewan

had in his Dasara Address summed up the situation by saying that the progress had not been satisfactory and that the apathy displayed by the Local Bodies was attributable chiefly to the deficiency in the elected popular element and to the want of reasonable powers of control over their own funds. Now, we have to see, as Mysore Government did see in the year 1916, with reference to the legislation of 1902 and 1906, how far the consolidated and the amended regulations of 1918 have served the purpose which His Highness' Government had in view to liberalize Local Self-Government in the State.

With the experience of the past few years, I think, I am competent to state that the administration of local affairs by the Municipal Councils and Local Bodies has, on the whole, been satisfactory. It shows a substantial advance on the conditions prevailing a decade ago. There are at present 8 District Boards, 77 Taluk Boards and 833 Village Panchayets, all of them constituted under the Local Boards and Village Panchayets Regulation. There is also, in addition, the Sanitary Board of the Kolar Gold Fields, which, although constituted under the Mines Regulation, performs in respect of that area almost all the functions of the District Board. The three District Boards of Bangalore, Kolar and Hassan have non-official Presidents and the Bangalore District Board has been given the right of electing its own President. Seven District Boards have non-official Vice-Presidents, and not less than two-thirds of the members of the Boards are elected. Sixty-five out of 77 Taluk Boards have non-official Vice-Presidents. The proportion of elected members of these Taluk Boards is one half. As regards Municipalities, there are at present 2 City Municipalities, 29 Town Municipalities and 71 Minor Municipalities. Four Town Municipalities have been given the right of electing their own non-official Presidents and 85 Municipalities have non-official Vice-Presidents.

Turning now to the financial position of the Local Bodies, it will be found from the public reports that nearly 50 per cent increase in the local resources of the Boards have been effected by the assignment to them of the Local Funds General and the Mohatarfa by Government. The income of Local Boards during 1912-13 was Rs. 9,00,972 and during 1921-22, it had risen to Rs. 13,64,000. The income of the Municipalities has also increased from Rs. 9,85,000 in 1912 to Rs. 25 lakhs in 1921-22. The total income of all the Local Self-Government institutions in the State was over Rs. 42½ lakhs last year, and this large sum indicates the scope that the Local Self-Government institutions now have for the fulfilment of their statutory obligations and the management of their own local affairs.

There is, however, another side of the picture. If I present that side to you, I hope you will not take it amiss ; for, I have no desire to disparage the work already done or to discount the merit of the disinterested work that has been in evidence everywhere during the past few years. While there has been a decentralization of initiative and removal of control by Government, so far as Local Self-Government is concerned, and also very substantial increase in their resources, I regret to have to say that the additional duties and functions contemplated by the 1916 scheme have not been attended to in the same proportion. The Taluk Boards and the Union Panchayets have not got into full working order, with the result that Panchayets are, for the most part, unpopular amongst the people and representations are very frequently coming to Government for their abolition. The District Boards have not taken advantage of the privilege of passing resolutions in matters of general interest, and as regards economic work also, their activities have been, to some extent, hampered owing to various causes. Although the Local Boards have sanctioned additional expenditure under some of their normal services, very little has been done to take over the enlarged functions, and in fact, nothing has yet been accomplished in respect of the obligations imposed upon Local Bodies for the development of Primary Education. At present, the contribution from local resources towards the total expenditure of Rs. 17½ lakhs on Primary Education in the State is as follows :—

Rs. 62,000 from Municipalities,

Rs. 2,75,000 from Village School Fund, and

Rs. 1,15,000 from Education Cess levied from the three Districts of Bangalore, Chitaldroog and Hassan.

It is necessary, at the present moment, having regard to the great cry from the people in rural parts for more elementary schools, to realize the paramount necessity of making adequate provision for a widely extended scheme of Primary Education for the people and this cannot be achieved without the fullest co-operation on the part of the Local Bodies

and Municipalities throughout the State in the matter of finance. The scheme laid down in the Education Memorandum has not yet matured and it is extremely probable that that scheme will have to be revised, owing to the fact that the local resources counted upon are not forthcoming. Whether the Government desire to go back to the Village Aided System under a scheme of enhanced grants and greater security for the teachers or adhere to the scheme of conversion of aided schools into Government schools, it is evident that an additional sum of nearly Rs. 10 lakhs for Primary Education alone will have to be found before the State can have Village Elementary Schools of an adequate number representing a reasonable ratio to the total population.

With a view to indicate the general improvement of the financial position of District Boards, I might give you some figures. The District Boards of Mysore, Bangalore, Kolar, Tumkur and Chitaldrug put together have a normal excess in the annual income over the expenditure of nearly 2 lakhs per annum, while the Mohatarfa revenue collected in these districts and assigned to the Boards amount to Rs. 1,78,250. The financial condition of the Kadur and Shimoga District Boards is not satisfactory as their normal expenditure exceeds the normal income. The balance at the credit of District Boards, except the Kolar District Board, at the end of 1921–22 was Rs. 35½ lakhs which, of course, included Rs. 12 lakhs to the credit of the Railway Cess. This balance includes the accumulated surplus under Local Funds General and Mohatarfa that were transferred to the District Boards on the 30th June 1917.

As already stated, the contribution towards Primary Education from the Boards is practically nominal; the contribution towards Medical Relief and Veterinary Dispensaries is also not adequate.

You have to decide at this Conference what proportion of expenditure for Primary Education, Medical Relief, Veterinary Services, etc., should be met from local resources taking into account all the available resources of these bodies, both Municipal and Local, under the existing system. You have also to go into the question as to how far it may be necessary to augment your resources by the levy of additional cesses or whether separate cesses for separate purposes should be levied or whether the Land Revenue Cess alone may be increased to 2 annas as was once proposed in the previous discussions. It is necessary for me to point out that, by the transfer of Local Funds General and Mohatarfa, Government made a two-fold sacrifice; for, they not only handed over a handsome surplus as well as a recurring income of Rs. 4,82,000 per annum, but also they took upon themselves to meet the charges that were, till such transfer, being debited to these funds. But applications for Government contributions towards expenditure in respect of special schemes of improvements still continue to come to Government irrespective of the large balances that lie unused at the credit of the Local Bodies in the treasuries or in investments and in the State Budget too, lump-sum provisions are made for Village Improvement, Town-planning and Sanitary Improvements, etc., which should equitably be met from your own resources. Government have promised half contribution in respect of water supply schemes, the total cost of which will normally be beyond the means of local resources. You will thus observe that you still depend very largely on Government subventions and doles which, however, are not regulated at present by any fixed principle.

I wish to bring to your notice one other important matter, and that is, the desirability of co-ordinating the work, giving advice and exercising proper supervision over expenditure in respect of the administration of all local bodies. The idea of establishing a Central Board for the purpose has been discussed previously and given up. The proposal was mooted in British India as far back as 1882, and I do not wish to take much of your time by referring to the discussions that have taken place without any definite conclusions being reached on the subject. You may be aware that the Montague-Chelmsford Report did not approve of the idea. The difficulty lies in the fact that by establishing such a Board, there may be a tendency towards too much official interference from the Central Government, local conditions may be ignored and a stereotyped form of local administration may be set up to the prejudice of local interests. Perhaps an annual Conference of the nature that you are holding now may be useful, or perhaps, a Standing Committee of the Representative Assembly and the Legislative Council may be constituted to consider problems arising to advise Government as to the measures necessary. I am sure you will give your careful consideration to this difficult question and

favour Government with your views in the matter.

In conclusion, Gentlemen, let me hope that this Conference will give a powerful impetus to the development of Local Self-Government in Mysore. Times are changing and the administration of all local affairs must, under the altered conditions of Government as well as the awakening amongst the masses, be gradually transferred to local organizations. The constitutions of both the Municipalities and Local Bodies have to be suited to the needs of the times and adapted to the requirements of the people; and whatever policy is framed, it must naturally be framed on an elastic basis. Success and efficiency in the administration of local affairs cannot be attained all at once. Local authorities must be allowed to make experiments and even to make mistakes. A proper sense of responsibility has to be encouraged and the system should attract the best men available for taking part in local administration. The Mysore Government have already established a liberal system of Local Self-Government, and are not discouraged by the results so far achieved. In fact, they are prepared to go further and give additional scope and privileges. I made a special point of this in my reply to the Kolar Municipal Address last August. I said "We want to delegate powers to non-official friends, we want to take away all the administrative control and all the management of local affairs from the hands of Amildars, Sub-Division Officers and Deputy Commissioners." I also added, "but at the same time, our non-official friends have to be bold and need not be nervous about the matter of increasing municipal resources."

The two City Municipalities have a grave responsibility in this respect; for, they get the largest assistance from Government in regard to water supply, lighting and improvement schemes, and have to show the example of civic responsibility that may be emulated by their less fortunate co-adjutors. So long as the custodians of local interest who are really the representatives of the people realize that privileges also entail obligations, we need have no fear as to the future success and the ultimate vindication of the progressive and enlightened policy which has been hitherto pursued and which in a larger measure is intended to be continued in future by the Government of His Highness the Maharaja.

I have much pleasure in calling upon your President to deliver his address.

Presidential Address.

The following Presidential address was then delivered by Mr. Mir Humza Husein, B.A., B.L., Second Member of Council:

INTRODUCTORY REMARKS.

GENTLEMEN,—Through the kindness and courtesy of the Dewan Saheb, the honour has fallen upon me of presiding over this Conference and addressing you on this occasion. The problems of Local Self-Government are of absorbing interest and have been before the public eye ever since the awakening of the political consciousness of the people, as administration of one's own affairs affords a training ground for 'political and popular education' and for the exercise of the higher duties of citizenship. Ever since the Resolution of Lord Mayo's Government in 1870, which contained the germs of Local Self-Government, Commissions and Conferences have been held and as a result of their deliberations, instalments of reforms have been given to make the Local Self-Government real and effective. The subject has assumed additional weight and importance on account of the introduction of Reforms in British India. 'It is,' say the authors of the Report on the Indian Constitutional Reforms, 'by taking part in the management of local affairs that aptitude for handling the problems of Government will most readily be acquired.' They add further that 'it is of the utmost importance to the constitutional progress of the country that every effort should be made in local bodies to extend the franchise, to arouse interest in elections and to develop local Committees so that education in citizenship may as far as possible be extended and everywhere begun in a practical manner.' "One of the most important duties," says Sir M. Visvesvaraya in his book '*Re-constructing India*', "which the re-constituted Government in each Province will be called upon to perform will be to survey the field of local activities, study foreign experiences and pass a measure of Self-Government suited to the peculiar condition of the Province." These words seem to have been written with a prophetic vision of the future and we see now greater activity and interest displayed everywhere in British India for the improvement and development of Local Self-Government. Several Conferences, official and non-official, are being held and as a result of their deliberations, several legislative measures have been introduced into the Legislative Councils and some of them have been passed into law. We in

Mysore are on the threshold of the momentous Reforms which have been announced by the Dewan Saheb under the command of our beloved Sovereign and it is but meet and right that we should assemble now in a Conference, take a retrospect of the past, find out the defects and drawbacks in the constitution and working of the local bodies which have hampered our progress and devise suitable measures to make the local bodies a living force for the betterment of our social and economic conditions in the new Constitutional Development of the country.

It is not necessary for me to go into the history of the Local Self-Government in Mysore. That task has been already performed by abler hands than mine, by our Dewan Saheb in the exhaustive and admirable speech he delivered while introducing the present Local Boards and Village Panchayets Regulation in the Legislative Council in 1917, and by our revered and respected citizen Dewan Bahadur Mr. K. P. Puttanna Chetty, C.I.E., in the address which he delivered in the first Local Self-Government Conference which was held in Mysore in 1915. Suffice it to say, that by reason of the historical accident of Mysore having enjoyed the benefits of British Rule for nearly half a century, the Local Self-Government institutions as they existed in British India were from time to time transplanted into our State with little or no modifications. We were therefore deprived of the opportunity of developing our Scheme of Local Self-Government on independent lines suited to the genius of our people and in consonance with our past traditions.

In Mysore, as in British India, the Village Panchayet and the Town Guild have played an important part in regulating the affairs of the people in rural and urban areas. The former still survives though it has been in the process of decay on account of the growth of individualism, the result of the present system of education and the operation of the raiyatwari system; and the latter exists but in name in the person of 'Yejman' and 'Setty' in the big cities of Bangalore and Mysore and other trading centres. Referring to the Indian Village Communities, Sir Charles Metcalfe said—

"They seem to last when nothing else lasts. Dynasty after dynasty tumbles down, revolution succeeds revolution; Hindu, Pathan, Moghal, Mahratta, Sikh, English are all masters in turn, but the Village Community remains the same."

The Kotwali system of the Moghal days existed in the cities of Bangalore and Mysore till the early seventies when it was totally abolished. In the natural and evolutionary progress of things, these institutions should have been developed and expanded according to the spirit and needs of the times; but instead of that, we started with Committees for towns and districts—institutions unknown to the people and strange to the polity of India and it took a long time for the people to accustom themselves to the working of these bodies and adapt them to their social and economic conditions. No wonder then that they were described from time to time as moribund institutions possessing no capacity or power for good. These Committees have been replaced by Municipal Councils and Local Boards. The former have now a settled type of constitution, but the latter are still in the process of evolution. As regards these bodies, the authors of the *Report on Constitutional Development in Mysore* remark, "Our local bodies are the paralytic lower limbs of the administration. That is the imminent risk (as everywhere else in India), that weakness in the lumbar region, and we must beware lest, by throwing an Atlas's load of State responsibilities on drooping shoulders, we break the spine!"

As remarked by a writer of eminence, Local Self-Government as administered in British India is an exotic institution, but as a poet says—'past cannot be recalled and done undo' and we will have to adopt the present institutions as the basis of our future development approximating them to the traditional institutions of the country and impregnating them with the modern spirit as far as possible.

Municipalities.

Now dealing first with the Municipal Councils, they are divided into three classes—the City, the Town and the Minor Municipal Councils. The basis for this classification is the population of the area, *viz.*, a population of 2,000 and above for a Minor Municipal Council and 5,000 and above for a Town Municipal Council, the Cities of Bangalore and Mysore being declared as City Municipal Councils under the Regulation itself. Why this standard of population was adopted is not clear from the Regulation, nor from the rules framed thereunder It seems to me that the true principle for the conversion of a rural area into a Municipality should be its capacity to bear the civic burden. It must at least be able to perform the most essential of its

obligatory functions satisfactorily. There are in all 102 Municipalities in the State, of which 71 are Minor Municipal Councils. The income of the latter is very poor and they are not able to employ a separate Sanitary staff nor even a separate Vaccinator or Midwife for the Municipal area. The system of having a joint Sanitary staff with the Taluk Board has not worked well on account of dual control. It is for you to consider whether these Minor Municipal Councils should not be disestablished. No doubt some of the Taluk Headquarters will be deprived of the dignified appellation of Municipalities; but these areas are essentially rural in their nature and organization and they are at a disadvantage now since they have to contribute heavily for some of the obligatory services, leaving very little for expenditure on works of public utility. Moreover, it has been proposed under the Scheme submitted by the Constitutional Reforms Committee to disenfranchise them for representation in the Representative Assembly and it is a matter for consideration whether there should exist two classes of municipal areas, one superior enjoying the franchise and the other inferior deprived of this valuable privilege.

City Municipal Councils.

Our City Municipalities are as efficient as they can be and can compare favourably with any Municipal City in British India. But their present condition is due largely to the bounty of the Government. They are not able to bear the full cost of maintenance of water-supply and they have just agreed to bear a small share of the cost of primary education which is one of their obligatory functions. They do not contribute anything towards the maintenance of their premier hospitals and maternities and have done little or nothing towards economic development or improving the social amenities of life. The incidence of taxation in the City of Bangalore is Rs. 4–1–3 and that in the City of Mysore Rs. 2–7–6 per head. Compared with other cities in British India, the incidence is light and the Government will be justified in calling upon the Councils to bear a greater share of the expenditure as regards the necessary services. But opinion may not and cannot be uniform as regards the capacity of a Municipal Council to bear further burdens and a difference of opinion between the Government and the Municipal Councils is likely to arise on such occasions. There should be a definite standard laid down as to how far the citizens can tax themselves and this should be fixed in proportion to the average income of the citizens. Any expenditure over and above this ought to be borne by the State. If any such principle is adopted, the conflict between the Government and the Municipal Councils, which is sure to occur as the expenditure of the Municipalities increases and demand is made for Government subventions, will be avoided.

Improvement of Municipal Finance.

Some suggestions have been made in the notes placed in your hands for improving the finances of the Municipalities and one of these is the substitution of the terminal tax for octroi duties.

The Conference of 1915 adopted a resolution to that effect but the Government left the matter to the decision of the Municipal Councils themselves. But no effect has been given to this order by any of the Municipalities. The subject has been fully discussed by Dewan Bahadur Mr. K. P. Puttanna Chetty in his Presidential Address of 1915 and I do not like to take up your time by going over the same arguments again. But I would like to bring to your notice the following extract from the *Imperial Gazetteer of India*:—

"Octroi is levied only in the Punjab, the United Provinces, the Central Provinces and Bombay. In these Provinces, it is the principal source of taxation and in the Punjab it yields more than 90 per cent of local taxes. It is a form of impost which is not without objection as its management is expensive, and unless kept within narrow limits and carefully watched, it is apt to degenerate into a transit duty and thus inflict injury on trade. It is however familiar through long usage to the inhabitants of North and West India (and I may add to the inhabitants of Mysore also) and could not be abolished without the imposition of direct taxes which would be much less popular. Town duties were a common incident of native administration and everything that passed into or through the City had to pay a 'chungi' or handful. It was not until many years had elapsed, and repeated orders had been issued that the impost lost the injurious qualities of a transit duty."

The demand on the part of Municipal Councils for the increase of dutiable articles is increasing and it seems to me that a definite principle should be laid down for the selection of such articles. One principle, I would advocate, is that no article of local production should

be taxed if it has to stand competition with foreign manufactured or imported article.

Representations have also been made for the substitution of Mohatarfa Shop Tax in place of Profession Tax. The Conference of 1915 recommended the abolition of Shop tax and introduction of the Profession Tax. Things have changed considerably since and Income-tax has been introduced. Whether a tax of the same nature should be levied by the Municipalities is a point for consideration. Shop tax has this advantage that people have been accustomed to it by long usage and it is authoritatively stated that the success of the Bombay Municipal Administration in its initial stages during the middle of the last century was due to the fact that it imposed taxes which had their prototype in the Mohatarfa taxes of the Mahratta Administration.

Another important suggestion made is the introduction of Municipal trading. The arguments both for and against have been summed up in the notes placed in your hands and the question is not easy of decision. An English writer on Local Self-Government writes on the subject as follows :—

"The controversy is unceasing from decade to decade. Abstract principle on the one side or the other is supplemented by a perennial battle of statistics and the flinging of profit and loss which each interprets as he pleases. It is certainly not my purpose to attempt to justify one side or the other. Those who delight in argument will find a bulky literature for their examination. But so far as the facts are concerned, it may be roughly laid down that there has been a general tendency to give the Cities the right to work their own monopolies and a great reluctance to permit them to embark on trading which has no monopoly character."

The same writer observes, "Continental countries are familiar for example with the municipal theatre, the municipal music-hall, the municipal concert room, and the municipal beer garden, and there is no intrinsic reason why you should not see in the future the municipal cinema showing edifying films, or the municipal public-houses providing teetotal or weekly alcoholic refreshment."

I do not know what the decision of this Conference will be, but if you decide in favour of municipal trading, I would suggest at once a motor service for which a monopoly can be easily created and the establishment of baths, for which there is a real necessity, and of agricultural depots for the sale of agricultural tools and implements which will greatly help the raiyat population.

Municipal Organization.

You might remember that, in his Presidential Speech at the Conference of 1915, Rajasabhabhushana Dewan Bahadur Mr. K. P. Puttanna Chetty advocated the appointment of Municipal Commissioners on the Bombay model. I am glad to state that a Bill providing for the appointment of Commissioners for Civy Municipalities has been recently passed by the Legislative Council.

As regards the appointment of Presidents, the policy of the Government has of late years been to give elected non-official Presidents to Municipal Councils at District Headquarters, except at places where the Municipal Commissioners have failed to elect their Presidents and Vice-Presidents under the rules. Such a phenomenon occurred recently in the premier Cities of Bangalore and Mysore. In this connection, I would like to read to you the following extract from the book from which I have already quoted :

"In France, the Mayor (Maire) or chief ruler of even the tiniest village or town in the remotest corner is appointed by the Central Government in Paris and is responsible to that Government for the way in which he carries on his duties. In Germany, before the War, the paid Burgo-master who largely maintained the activity of the town was responsible to the Government for the efficiency of the town, and efficient Burgo-masters were promoted from administering small communities to ruling over great Cities."

The report of the Bombay Committee on Local Self-Government appointed in 1915 commends the French system for adoption. Para 28 of that report runs as follows :—"The introduction of Local Self-Government in India is based on the Western Science of administrative decentralization and it is necessary therefore to study closely western precedents and to adapt them cautiously to Indian conditions. A closer parallel will be found to Indian conditions of public life in France than in England and the French system is by universal consent more complete and logical than the English. Both of course are governed by historic traditions, and an analysis of the difference would be out of place here. If the analogy be admitted then, since Local Government is undoubtedly a living thing in France, it would appear to be unobjectionable to model the new system for advanced districts on the French pattern."

Government have gone too far to adopt the French system in its entirety, but as regards the election of Presidents, there seems to be no reason why the American system of electing the President by a plebiscite should not be adopted. In the great City of New York, for example, the Mayor and the Chief Officials are elected directly by the voters which election "has all the interest and much of the importance of the State, Government or Presidential election." Whether our direct election of the President will have that importance and grandeur, I cannot say, but we are sure to be spared the fracases which we have seen of late and which do not enhance the prestige and reputation of our premier Municipal Councils.

Another subject which, though not on the agenda, I would like to bring before the Conference, is the system prevailing in England that, though the term of office of Town Councillors is three years, the elections are so arranged that one-third of the Councillors retire every year. This system has the advantage of continuity and of keeping alive the interest of the citizens in the Municipal Councils which at present becomes dormant as soon as an election is over and revives again at the end of three years when a fresh election takes place.

Local Boards.

Coming now to the second branch of the Local Self-Government Scheme, *viz.*, the Local Boards, they consist of District Boards and Taluk Boards; and the Village Panchayet which is the first link in the chain of the Local Self-Government Scheme is treated under our Regulation as a separate entity. The constitution of these Boards has been democratised as much as possible under the Local Boards Regulation of 1918.

District Boards.

Provision has been made for the appointment of non-official Presidents and Vice-Presidents and already for two districts, nominated non-official Presidents have been given and the right of electing the President has been given to one other District Board. How far the experiment will prove a success remains to be seen, for the President of a District Board, unlike the President of a Municipal Council, has a large area under his jurisdiction and will have to travel constantly and go into the interior of the District and this requires active habits and freedom from the worry and anxiety of earning one's daily bread. Perhaps a better arrangement would be to introduce the system of Commissionership as in the City Municipal Councils, the Commissioner being the Chief Executive Officer of the Board subject to its control and the President being given the general powers of supervision.

At present, members of the District Board are generally elected by the Taluk Boards and a few Town Municipalities and some not exceeding one-third of the strength of the Board, are nominated by the Government. One of the subjects on the agenda is whether Municipalities should be represented *qua* Municipalities when, under Section 4 of the Local Boards Regulation, the District Boards have no jurisdiction over Municipalities. Another point and a very important point for consideration is whether the election to the District Board should be by secondary election, *i.e.*, by Taluk Boards as at present, or by direct election. The latter system seems to be very much in favour now. Almost all the Conferences that have been held in the Madras Presidency in recent times have advocated that system. It seems to me that if the District Boards are to be a living force capable of influencing and being influenced by the people, that system will have to be adopted. At present, the ratepayer is not in direct contact with the Board that administers the taxes collected from him and the representative of the Taluk Board on the District Board may not at all be his nominee. Consequently, he loses all interest in the work in the activities of the District Board. That seems to be the real reason why the District Board has failed to influence village life as is evident from the fact, as I shall show later on, that it has failed in the resuscitation of village communities. If direct election is adopted and the representation of Municipalities is done away with, the present strength of the Board, especially of Bangalore which is somewhat unwieldy, can be reduced to manageable proportions. Only the number of nominated members will have to be slightly increased. The Bombay Committee says, "The power of nomination has been and will continue to be necessary to find places on the Boards both for representatives of special sections of inhabitants and for gentlemen who for diverse reasons are unwilling to submit themselves to election by the ordinary territorial constituencies. It is beyond question that such nominated gentlemen have in some cases proved to be amongst the most valuable members of the Boards. It would be invidious to mention many names but the outstanding example is the late Hon'ble Mr. Gokhale whose services

might have been lost to the country had he not been nominated to be a member of the Poona Municipality." It is worthy of note that the elected President of the Bangalore District Board and the two nominated Presidents are nominated members of the respective District Boards.

Taluk Boards.

Coming now to Taluk Boards, they are constituted by the direct election of some members by rural constituencies, by the representation of some select Village Panchayets and by nomination by Government of representatives of different classes and interests. The system of selection amongst Village Panchayets for representation in the Taluk Board has not given satisfaction and demands are being made to extend the privilege to all Village Panchayets. The demand cannot be resisted upon any good ground and if the privilege is given to all, the Taluk Boards would not only become unwieldy, but the resources of the Boards will not be sufficient to meet the travelling allowances of the members. Apart from this, the question has been raised recently whether there is any necessity for an intermediary Board between the District Board and Village Panchayets. The Hon'ble Mr. Patro has elaborately discussed the question in his book "*Studies in Local Self-Government*" and he is inclined to the view that the Taluk Boards should be given the full powers of District Boards, an Advisory Committee of experts taking the place of District Boards. The Bengal Government has already drafted a bill for the abolition of Taluk Boards, which was placed for discussion before the District Boards Conference recently held in Calcutta. In Madras, the Taluk Board is more or less a Sub-Division Board and exercises jurisdiction over the area included in a Revenue Sub-Division. In Madras, the area, the revenue, and population of a taluk are much larger than that of any taluk in Mysore and so the idea of a Taluk Board with separate Engineering, Medical and Sanitary services may be quite feasible. But in Mysore the finances of Taluk Boards, in spite of the fact that they are entitled to 50 per cent of the local cess, are so poor that they cannot aspire to the higher position advocated for them in Madras. The revenue of the Taluk Board is consumed in making contributions towards the maintenance of roads, medical and sanitary services and in meeting the cost of their clerical and executive establishments. They have not been able to make any contributions towards the Village Panchayets and they do not get more than a few hundred rupees to operate upon in respect of works of public utility. There is much to be said in favour of the Bengal Scheme, but it may be argued that we have gone a bit too far to introduce it into Mysore. But if the Conference decides to continue these Boards, it is necessary to devise measures to make them efficient and do practical good work. I may say that neither the Board nor its executive have done any substantial work towards reviving the Village Panchayets or putting more life into Village Communal Organizations.

Functions of Local Boards.

The powers and duties of the Local Boards are well known to you and it is not necessary for me here to describe them at any length. They were under Regulation No. VI of 1918 of two kinds, obligatory and optional, but the amending Regulation III of 1921 imposing upon the Boards the duty of economic development makes all the duties obligatory. But the obligatory nature of these duties has been qualified by the phrases 'as far as funds permit' and 'subject to such conditions and exceptions as the Government may from time to time make or impose.' But no substantial work in the field of economic development has been undertaken by any of the Boards in spite of allotments made by the Government and they are going on with the ordinary routine of their duties in the matter of maintenance of roads, musafirkhanas and cattle-pounds, of sanitation and medical relief. None of these duties appeal to the heart or head of the generality of the rural population. The raiyat is notoriously indifferent to communications because his bullock and 'wedder' carts can negotiate any rut or pit in the road or cart-track. He does not care for musafirkhanas and travellers' bungalows, because he seldom stirs out of his village except it be to go occasionally to the Taluk Cutcherry or Law Courts. He hates from the bottom of his heart cattle-pounds and regards the visit of the Sanitary Inspector as a nuisance if not a source of oppression. He has begun to appreciate the western system of medicine, but he thinks that the dispensaries are established through the bounty of the Government. The things that he is most interested in, his lands, his cattle, his pastures and tanks have been placed outside the purview of the Local Boards. No wonder then that the Local Board administration has not touched and influenced the village life to any appreciable extent and the authors of the

Mysore Constitutional Reforms Report have rightly characterised our Local Boards as "the paralytic lower limbs of the administration." But the paralysis is purely of local origin and is not due to the weakness of the head which supplies the nerve power. If a proper stimulus is given, there is no reason why these limbs should not regain their strength and function with vigour. First and foremost, the Local Boards should change their methods of work and pay greater attention to education, agriculture, veterinary hospitals, co-operative societies, arts and crafts end subsidiary occupations in addition to medical relief and sanitation—things in which the raiyat is directly interested and which are calculated to improve his moral and material condition. This means money and the question arises, how to improve the finances of the Boards.

FINANCES OF DISTRICT BOARDS.

The average ordinary income of the District Boards during the four years prior to the introduction of the Local Self-Government Scheme was Rs. 8,21,581 and it rose in the four following years to Rs. 13,05,000. The increase is partly due to the transfer by the Government of Local Funds General and Mohatarfa amounting to Rs. 2,50,000 and 2,32,000 respectively and partly to the increase in the local cess on account of the increase of land revenue. The income from other sources, *viz.*, tolls, ferries and cattle pounds and markets is small and it has remained almost stationary. The expenditure has gone up from Rs. 8,38,228 in 1916–17 to Rs. 10,71,182 in 1921–22. The increase in the expenditure is due chiefly to the increased cost of establishments, increased allotment for the maintenance of roads, increased cost of medical relief and sanitation and other incidental expenses such as printing charges and travelling allowances. The expenditure under travelling allowances alone has increased from Rs. 13,741 in 1916–17 to Rs. 41,500 in 1921–22. Of the eight District Boards, the District Boards of Shimoga and Kadur have a minus balance, their normal income being Rs. 71,600 and Rs. 46,000 respectively while their normal expenditure amounts to Rs. 80,430 and Rs. 48,391. The other Boards show a little excess of normal income over normal expenditure which vary from Rs. 14,636 in the case of Hassan District to Rs. 50,587 in the case of Mysore District. But these savings seem to me to have been effected at the cost of works of public utility. The expenditure upon public works in the year 1916–17 was Rs. 1,28,964 and it came down to Rs. 76,253 in 1920–21. To do any real effective good work, the resources of the Boards have to be improved. But there is no elasticity in their system of revenue. The main sources of revenue are, as you know, 76 per cent of local cess and mohatarfa, the income from other sources as already stated being small and not capable of much expansion. Mohatarfa too is a diminishing source of revenue, for wherever a Village Panchayet is formed, the revenue from that source in respect of the village or group of villages concerned goes to the Panchayet at the expense of the District Board. Other sources of revenue are to be tapped, but the District Boards have no powers of local taxation like the Municipal Councils. The Boards are therefore dependent entirely upon the bounties of Government and this kills the initiative, destroys the sense of responsibility and individuality and introduces an element of uncertainty in the finances which is not conducive to steady and rapid development and that is the reason why eminent writers on Local Self-Government have condemned the system of doles from Government. In the order on the Local Self-Government Scheme, Government have promised to give grants-in-aid to Local Bodies equivalent to half the amount they may raise by special means. This is the right principle which has been adopted by the Ministry of Health in England. The same principle of grant-in-aid may be extended by the Government in case of services also instead of receiving contributions from the Boards. The Government should give grants-in-aid to the Local Bodies, transferring to them the control over the services—Medical, Sanitary, Educational and Engineering—as far as it is compatible with efficiency; for without such control the District Board will be an abstract entity and not a living organization capable of influencing the life and actions of the people committed to its charge. For the foregoing reasons, I would advocate the following measures for the success and progressive development of District Board administration—

(1) An element of elasticity and expansiveness in the revenue system of the District Boards.

(2) Power of levying local rates for necessary and essential services.

(3) The duties of an obligatory nature to be defined.

(4) A larger power of control over the

services, the maintenance of which wholly or partially is a charge upon the District Fund.

(5) Direct responsibility of the members to the rate-payers and the introduction therefore of the system of direct election.

These may also be supplemented with larger powers of expenditure and power to pass their own budgets subject to certain safe-guards which the Royal Commission on Decentralization recommended and which the Government of India have now accepted in their Resolution of 1918.

Village Panchayets.

Coming now to the last link in the chain of Local Self-Government which ought properly speaking to be the first, the importance of the development of Village Panchayets has been emphasized from time to time in the Government of India Resolution of 1882, in the Report of the Decentralization Commission and last but not least, in our own Reforms Report, just published by the Government, the authors of which describe it as "the true Jacob's ladder for a safe and sure ascent to the democrat's heaven."

Government, being aware of the importance of the Village Panchayet to the material and moral progress of the country, passed a liberal measure of reform in the Local Boards and Village Panchayet Regulation of 1918 constituting it a self-governing and autonomous unit with powers of taxation which the Taluk and District Boards do not possess. But in spite of the fact that the organization has been given the characteristics of the old Village Panchayet, it has not succeeded as well as it should have done. Out of the Unions started under the Regulation of 1902, 250 are stated to be working as Panchayets and out of 607 Panchayets notified under the new scheme of Local Self-Government, only 46 are stated to be functioning and very many villages have put in applications for disestablishment. This is a great disappointment indeed and it behoves us therefore to find out the true causes of the failure and provide adequate remedy for the same. The situation with which we are confronted now is the one which the authorities had to face in Bengal on the first introduction of the Municipal Act in Towns in 1842. It is stated that not only the people refused to pay the taxes but tried to prosecute the persons who attempted to collect them. The same is stated to have been the fate of the subsequent Act passed in 1850. But the municipal administration has prospered and taken deep root in the country because of official connection with it. In our villages also, the official stimulus is necessary, because for ages past the villagers have been in the habit of looking up to officials only for guidance in almost every walk of life. The Vice-President of the Taluk Board goes to the village but the Patel and the village officials do not care for him. He therefore feels reluctant to tour and his itineration is not generally satisfactory. In one Taluk, I found that the Vice-President of the Taluk Board had not moved out of his headquarters for more than 18 days in a year. Under such conditions, it is futile to expect that village administration will prosper and as a result of this, we find that there is a heavy accumulation of arrears to the extent of some thousands of rupees. In the Bangalore District alone, the arrears amount to Rs. 54,377, in the Tumkur District to Rs. 46,393 and in Chitaldrug to Rs. 34,006. The success of the old Union Panchayets was due to the fact that they were brought into existence and nurtured under official discipline. That official sympathy is necessary in the initial stages is evident from the history of municipal administration in Mysore and other parts of India. This appears also to be the feeling in other parts of India as is evident from one of the Resolutions of the Local and Municipal Conference of the northern group of Districts of the Madras Presidency held in October last. It seems to me therefore that, till the Panchayet is able to stand on its own legs, the Patel and the Shanbhog should be the chief functionaries of the Panchayet, discharging their functions with the aid of an elected body of the elders of the village or 'Yejmans' and under the direct control of the Revenue authorities, the President of the District Board having co-ordinate functions of inspection and criticism.

As regards the functions of the Panchayets, everything which is useful to the village life and in which the rural population is expected to take interest has been included in Section 54 of the Local Boards and Village Panchayets Regulation in prescribing the duties of the Panchayet. But attention has not been concentrated upon a few points essential to the development of village life in accordance with modern requirements. The ordinary notion of the duties of a Village Panchayet, as it is now working, is to provide a few sweepers and a few lights in the village, which on account of mismanagement excites the contempt of the raiyat rather than his thankfulness.

As in the case of Municipal Councils, some of the duties must be made obligatory and the taxes collected should be spent upon permanent works of utility so that the raiyat may find and realize that the money he pays is not wasted, and does not go into the pockets of others but is used for the good of the village. Education and not conservancy should be the first and foremost duty of a Village Panchayet. Every village or a group of villages should have a primary school with an agricultural section attached to it and if not a separate section, it must at least have a curriculum of studies with an agricultural bias. When a school is given, the Panchayet may be asked to levy a rate to supplement the grant that may be given to it by the Government. This will avoid the necessity of the education cess being levied for the whole district. The present provision that 75 per cent of the Taluk Boards in the district and an equal proportion of District Board members should vote for the levy of the cess is unscientific in its nature and quite unworkable in practice. There is absolutely no reason why a minority of Taluk Boards or a minority of District Board members should act as a drag upon the educational progress of the people of other taluks anxious to educate their children and willing to pay for the same. In my opinion, the unit for primary education should be the village and not the district. If this proposal commends itself to the Conference, I think the problem of primary education will be easily solved.

Besides a school, the Panchayet should have a Vaidyasala, a trained 'dayi' or midwife and a Co-operative Society which must not be of the ordinary kind, but a combined credit and agricultural society so that the villagers may borrow small sums of money as well as purchase manure, agricultural implements and seed from it, the Panchayet contributing some of the capital necessary for the purpose. The Panchayet may also be entrusted with jurisdiction to try petty cases of a civil nature. The Decentralization Commission as well as the authors of the Report on Indian Constitutional Reforms recommended the investiture of criminal powers as well, but I think we may for the present follow the English practice under which separate Justices of the Peace are appointed by the Government. The Panchayet may also be invested with the power of control over the muzrai institutions of the village and may also be given the necessary powers under the Tank Panchayet Scheme. Upon the analogy of the English boroughs maintaining their own Police, they may be asked to arrange for night watch as is being done now in the Punjab.

These may be classified as the obligatory duties of a Panchayet, the other duties such as improvement of communications and improvement of the village, establishment of a village choultry, reading room and library and even conservancy being relegated to the optional group to be undertaken as funds permit. If we adopt this principle, we will be able to approximate the Village Panchayet to the old conditions and may thus be able to vivify the village life and develop a healthy growth.

Another point to be considered in this connection is whether all the villages in the District should not be brought under the operation of the Village Panchayet Regulation. The present practice of having non-panchayet areas, whether with village improvement committees or not, paying no taxes and bearing no burdens side by side with the panchayets which pay taxes is pernicious in the extreme. Sir M. Visvesvaraya writes in his book "*Reconstructing India*" as follows :—

"Japan, faced with a similar problem, has solved it by grouping some 72,000 small villages for purpose of local administration in 12,000 unions. By this method, the remotest village has been enabled to attain to a standard of local education, production, sanitation and communications which would have been beyond its capacity had it sought independently to meet such requirements."

It may not be possible for the ordinary Revenue agency to undertake this stupendous task, but a special officer can be appointed for each Taluk or Sub-Division to devote his full attention to this work.

My scheme therefore for the improvement of the working of the Panchayets in its outlines is as follows :—

(1) Every village or a group of villages should be constituted into a Panchayet.

(2) The functions of a Panchayet should be divided into obligatory and optional functions and the former should include primary education, medical relief, water-supply and co-operation.

(3) The Panchayets should be bound to supplement by taxation, to the extent necessary for the performance of their obligatory functions, the contributions that may be made to them by the Government or by the District Board for the performance of these objects.

(4) The Panchayets should have power of independent action and power also over their purse, outside control over them being limited to the minimum for preventing deviation from general policy and misapplication of funds.

(5) The control over the Village Panchayets should vest in the Revenue Department, say for a period of five years, until these Panchayets are brought into proper working order.

These are the thoughts that suggest themselves to me on some of the important subjects on the agenda. I do not like to deal with the other subjects as they are more or less of a departmental nature and do not involve any important question of principle. The views that I have expressed in this address are my personal views and should not be mistaken for the view of the Government. My views also are subject to revision, alteration and modification in the light of discussions in this Conference. With regard to Local Self-Government, there are no official or non-official views. Officials and non-officials are animated by the same desire to see that the Local Self-Government Scheme is a success and that the people manage their affairs efficiently and in such a manner as to bring more happiness and more comforts to their homes. Officials have been associated with you in this Conference not to enforce their views upon you but to help you by their long experience of administration to arrive at a proper decision in your deliberations. Success in the government of Local Bodies can be achieved only if the view-point of their administration is changed. The bent of their work should be economic, and moral and material progress of the people their chief aim.

CONCLUSION.

I would ask you now to proceed with the discussion of the subjects on the agenda; and I hope your deliberations will be inspired by the spirit of the following exhortation of Ruskin on the mutual responsibilities of the people and the Government:—

"I wish to plead for your several and future consideration of this one truth, that the notion of Discipline and Interference lies at the very root of all human progress or power; that the 'Let alone' principle is, in all things which man has to do with, the principle of death; that it is ruin to him, certain and total, if he lets his land alone—if he lets his fellowmen alone—if he lets his own soul alone; that his whole life on the contrary must, if it is a healthy life, be continually one of ploughing and pruning, rebuking and helping, governing and punishing; and that therefore it is only in the concession of some great principle of restraint and interference in national action that he can ever hope to find the secret of protection against national degradation. I believe that the masses have a right to claim education from their Government; but only so far as they acknowledge the duty of yielding obedience to their Government. I believe they have a right to claim employment from their Governors; but only so far as they yield to the Governor the direction and discipline of their labour; and it is only so far as they grant to the men whom they may set over them, the father's authority to check the childishness of national fancy, and direct the waywardness of national energy, that they have a right to ask that none of the distresses should be unrelieved, none of their weaknesses unwatched; and that no grief, nor nakedness, nor peril, should exist for them, against which the father's hand was not outstretched, or the father's shield uplifted."

Remarks by Mr. K. P. Puttanna Chetty, C.I.E.

In proposing a vote of thanks to the Dewan, Rajasabhabhushana Dewan Bahadur Mr. K. P. Puttanna Chetty, C.I.E., spoke as follows:—

DEWAN SAHIB & MR. PRESIDENT, My heart naturally rejoices at seeing this Second Local Self-Government Conference organized by the goodwill of the Government of His Highness the Maharaja, at which are gathered the chosen representatives and stalwarts of our City Municipalities and other Municipal Boards of the District and Taluk Boards and Village Panchayets. This may be truly called a People's Conference, though some would have liked to see it organized by the people themselves without the benevolent intervention of Government as was done with the First Conference of the kind held at Mysore. Many years have elapsed, and the Government could not have waited indefinitely. The *raison d'etre* of this Conference has been given in the Dewan's opening address. We are now at the threshold of the introduction of the Constitutional Reforms in Mysore, and Local Self-Government could not afford to wait. Both must go hand in hand, so that the people may have a full measure of the reforms. We therefore meet to-day to take stock of what has already been accomplished and to consider what further advance is necessary. The Conference of 1915, over which I had the honour to preside, was a notable one in many respects, and the result of its deliberations was seen in the inauguration of a larger measure of Self-Government in

our Municipal and District Board administration and the institution of Village Panchayets. It is sincerely to be hoped that the present Conference will be fully availed of by the representatives of the people and its deliberations conducted along fruitful lines which will lead to the further extension of the boundaries of Local Self-Government and a solution of the many problems bearing on the civic well-being of our people. I need not remind you, my fellow citizens, that your activities in this Conference intimately concern the daily lives lived in urban and rural areas, and must therefore appeal to the large public outside this hall and also those outside the State, who are faced with the same problems. The predominant share in a Conference like this belongs to the people, the Government playing the role of sleeping, but ever vigilant partners, with one eye always open. It is a matter of gratification to the public that the Dewan and Members of Council are so thoroughly identifying themselves with the people's cause on this platform.

The various suggestions made in the opening and presidential addresses will, I am sure, receive adequate discussion. The immediate objects of my rising at this stage is to perform the very pleasant duty of proposing a hearty vote of thanks to our esteemed and erudite Dewan, Mr. A. R. Banerji, for the favour he has conferred upon us by opening this Conference and delivering an illuminating address, which is characterized by the usual clarity of thought, breadth of view, grasp of essentials, and lucidity of expression which we have learnt to associate with his public utterances. I trust that his weighty words of advice will engage your earnest attention in the course of your deliberations.

A vote of thanks was here passed to the Dewan with loud acclamation, and Mr. Puttanna Chetty resumed: "I beg to propose another vote of thanks to Mr. Mir Humza Husein, Second Member of Council, who delivered the presidential address, which was exhaustive, covering the whole ground of Local Self-Government and teeming with useful and constructive suggestions."

The Dewan and other guests, other than delegates, left at 1-30 P.M., when the discussion of subjects began with the President, Mr. Mir Humza Husein in the chair. The Conference was at first proposed to be held for three days, but it had to be extended by another day to enable all the subjects being discussed. The attendance of the delegates on each of the four days of the Conference was as follows:—

First day	..	107
Second day	..	102
Third day	..	105
Fourth day	..	80
Average	..	98

Discussion of Subjects.

Before commencing the discussion of subjects, the President wanted to know the sense of the meeting as to the desirability or otherwise of the house resolving itself into Sub-Committees for the discussion of the subjects on the agenda and submitting their views to the Conference in the form of Resolutions. Messrs. H. Rangaswamy Iyengar, C. Subba Rao and T. Venkataramaiya spoke on the subject and the conclusion arrived at was that there was no necessity to form Sub-Committees, but that each of the subjects should be considered and Resolutions arrived at in the Conference itself.

Resolutions adopted.

After a discussion of each of the subjects on the agenda, the following Resolutions were passed at the Conference:—

I. That, if the Village Panchayet Scheme is to work satisfactorily, it should be introduced into all rural areas without exception, the jurisdiction of the Panchayet being confined to a single village or a group of neighbouring villages according to the convenience and wishes of the people.

II. That the following services should be prescribed as the obligatory duties of Village Panchayets:—

(a) Primary Education,
(b) Sanitation including water-supply,
(c) Communications,
(d) Agriculture including Veterinary and Sericulture, and
(e) Co-operation.

III. That it is desirable to invest Village Panchayets with the powers of Village Courts under the Village Courts Regulation.

IV. That it is desirable also to give to the Village Panchayet the powers now exercised by Dharmadarsis over the Village Muzrai Institutions.

V. That Village Panchayets should be bound to supplement by taxation to the extent necessary for the discharge of their obligatory functions, the contributions that may be made

to them by the Government or by the District Board, for the performance of those duties.

VI. That a Committee consisting of official and non-official gentlemen be appointed (1) to formulate a detailed scheme for the establishment of Village Panchayets in accordance with Resolution No. 1; (2) to indicate the Agency which should exercise control over these Panchayets; (3) to suggest the extent to which and the manner in which the Panchayets should perform the obligatory duties; (4) to suggest the conditions under which Tank Panchayets may be amalgamated with Village Panchayets; and (5) to suggest what other matters of communal interest may be brought under the category of obligatory duties.

VII. That the Village Improvement Committees formed under the executive orders of Government be abolished and the funds at their credit placed at the disposal of the Village Panchayets to be constituted in accordance with Resolution No. I in the respective areas, for use in the execution of the objects for which the amounts have been collected.

VIII. That it is not desirable to entrust the registration of births and deaths to Village Panchayets and that the existing arrangements for this work do continue, the Regulation on the subject being suitably amended so as to bring this work within the purview of the functions of District Boards and impose upon the Patels the duty of maintaining the prescribed registers instead of appointing separate Registrars for this purpose.

IX. That the Rules under the Village Sanitation Regulation be so modified as to empower Village Panchayets to grant house-building licenses and institute prosecutions for breaches of these Rules.

X. That vaccination in Municipal areas be made compulsory as a permanent measure and that the Vaccination Regulation be extended also to all Village Panchayet areas.

XI. That the procedure for the acquisition of land for the formation of new villages and the extension of the existing ones be simplified and the Deputy Commissioners empowered to sanction such acquisitions on their own authority subject to such limitations as the Government may prescribe.

XII. That the maintenance of avenue trees on Provincial as well as District Fund roads be entrusted to District Boards, subject to the existing rights of private persons and that the Engineering Department be requested to pay to the Board the amount they are spending upon the maintenance of avenue trees on Provincial roads.

XIII. That the Taluk Boards need not be abolished and that there is no necessity for Sub-Division Boards.

XIV. That the principle of direct election to the District Boards should be introduced and that, for the present, each Taluk be represented by two members on the District Board, one elected by the general body of voters in the Taluk and the other by the members of the Taluk Board.

XV. That it is not desirable to appoint non-official Presidents or Vice-Presidents of Taluk Boards *ex-officio* members of the District Board.

XVI. That it is not necessary to have representatives of Municipal Councils, including City Municipal Councils on District Boards.

XVII. That, while no change is necessary in the franchise qualifications prescribed for elections to the Municipal Councils, the franchise qualifications prescribed for Representative Assembly elections be adopted for elections to the Taluk Boards.

XVIII. That the franchise be extended to women in the case of elections to Municipal Councils and Local Boards including Village Panchayets on the basis of the same qualifications as are adopted for male voters.

XIX. That as it is necessary to provide for inspection of offices of Local Bodies and for speedy remedy to aggrieved parties, the Deputy Commissioner of the District, in addition to the powers now vested in him, be authorized to inspect the offices of Local Bodies and call for the records of any case either of his own motion or on the application of an aggrieved party and if satisfied that the order or proceedings of the Board or its executive is wrong or contrary to law, submit the records of the case with his opinion to Government for such orders as they may deem fit to pass in the matter.

XX. That it is necessary to appoint a Member of Council to be exclusively in charge of the Local Self-Government Portfolio so that he may tour frequently, inspect the offices and work of Local Bodies and the working of the laws and regulations and adopt suitable measures for rectifying the defects, if any, in the working of the Local Self-Government Scheme.

XXI. That a small Committee consisting of the Deputy Commissioner, President, Vice-President and a few non-official members of the District Board, the Chief Engineer for

Roads and the Executive Engineer of the District be appointed to consider the practicability of each District Board having its own Engineering staff, with due regard to economy and efficiency taking into account the amount which the District Board can spare annually for original works and repairs, the amount of contribution now paid to the Public Works Department for establishment charges and tools and plant and the expenditure which the maintenance of a separate Engineering staff will involve and that the resolution of the District Board on the recommendations of the Committee be submitted to Government for consideration.

XXII. That no change in the existing practice regarding the appointment, punishment and transfer of Sanitary Inspectors is called for.

XXIII. That, as regards medical officers attached to Local Fund Dispensaries, their transfer if desired by the Local Body concerned should be given effect to, though their appointment, promotion and punishment may rest with the Senior Surgeon or the Government as the case may be.

XXIV. That ordinarily no official borne on the establishment of a Minor or Town Municipal Council or on the establishment of the Local Boards should be retained in the same Municipal or Local Board office for more than three years and that in no case should the period exceed five years and that a list of officials in Municipal service who have completed three years' service should be sent periodically to the Deputy Commissioner of the District for effecting their transfer from one establishment to another, that as regards the officials of the District Board President's office drawing a pay of Rs. 40 and upwards, the list may be sent to Government for transfer of officials from one District Board to another District Board.

XXV. That, with a view to prevent deterioration of the service for want of openings for promotion, such of the Local Fund Head Clerks as possess the prescribed qualifications be included in the list of candidates eligible for Amildari.

XXVI. That a Committee consisting of an Account Officer, representatives of Municipalities including City Municipalities, and Presidents of District Boards be appointed for the revision of the Municipal Account Code and the compilation of a Local Fund Account Code.

XXVII. That, if it is decided by Government to entrust the disposal of local subjects to the District Boards and if a preliminary meeting of the members of the Representative Assembly under the presidency of the Deputy Commissioner is held for the selection of such subjects, and if such subjects are forwarded to the District Boards, the following procedure may be adopted :—

(i) in matters in which final orders can be passed by Government only, refer the subjects to Government with the opinion of the Boards; and

(ii) in matters which relate to Departments not under the control of the District Boards, but which can be disposed of by the Heads of Departments concerned, refer such subjects with the opinion of the Boards to the Heads of Departments concerned.

That the same procedure be adopted in case of subjects brought up before the Board by the members or referred to them by any other body.

XXVIII. That the District and Taluk Conferences be continued under the auspices of the District Boards, and that the Government be requested to contribute a moiety of the cost of the Conferences; and

That the Deputy Commissioner should generally preside over the District Conference and that, in respect of Taluk Conferences, he may preside himself or depute some other officer to do so.

XXIX. That to deal with the Educational, Industrial and Agricultural problems connected with the Economic Conference, the Local Bodies may have a single Committee in lieu of three separate Committees ;

That the Local Boards and Municipal Regulations be suitably amended so as to empower Local Bodies to grant loans for the encouragement of local arts and industries, subject to such limitations and safeguards as the Government may deem fit to impose.

XXX. That Government be requested to revive the Malnad Improvement Committees.

XXXI. That Minor Municipalities may be given the option of being converted into Town Municipalities or Village Panchayets.

XXXII. That, while the system of establishing toll-gates at the entrance to Municipalities on District Fund Roads is to be deprecated, the revenue from Municipal toll when levied should be shared between the District Boards and the Municipal Councils and that the Government should fix the share in some equitable proportion.

XXXIII. That as it is the duty of the State to provide facilities for the housing of the poor

and to provide suitable sites for building purposes to remove congestion in towns and as the Municipal Councils have been performing the functions which were being formerly performed by the State, this Conference recommends to Government that Municipalities and Local Bodies be exempted from payment of penalty to Government for the conversion of agricultural lands for housebuilding purpose.

XXXIV. That, as the present Mohatarfa rates are low, they may be suitably enhanced.

XXXV. That the Municipal Regulation be suitably amended so as to give option to Municipalities to levy shop tax in lieu of profession tax.

XXXVI. That the levy of Pilgrim Tax is objectionable on various grounds and should not be introduced.

XXXVII. That it is not desirable to abolish the levy of Octroi duties.

XXXVIII. That a tax on arms and hides be levied and that necessary provision for the same be made in the Municipal and Local Boards Regulations.

XXXIX. That necessary provision be made in the Municipal Regulation for the levy of surcharge duties on Excise.

XL. That provision be made for the levy of a tax on goats and pigs but not on sheep.

XLI. That one-third of the net realizations, after deducting Sanitary and other charges from Jatras held in connection with Muzrai institutions, be given to District Boards and the remaining two-thirds credited to the funds of the temple concerned. In the case of cattle shows, etc., organized under the auspices of Local Bodies, one-third of the realizations after deducting all the charges may be given over to the local temple or temples as the District Board thinks fit.

XLII. That in order to introduce an element of elasticity and expansiveness in the revenues of the District Boards, the District Boards be empowered to levy cesses like Municipalities subject to such conditions and limitations as the Government may impose and that the Local Boards Regulation be amended accordingly.

XLIII. That the District Boards be entrusted with the control of primary education and required to contribute one-third of the cost.

XLIV. That no uniform rule can be laid down regarding the contribution payable by the District Boards towards the cost of several services and that the question should be decided by the District Board concerned as it arises.

XLV. That the Local Boards Regulation be suitably amended so as to empower the Taluk Boards to levy Education Cess subject to such conditions and limitations as the Government may deem fit to impose.

XLVI. That the question of the establishment of Village Panchayets and Municipalities in Inam Villages and Jahgirs be referred to the Committee proposed to be appointed in connection with the establishment of Panchayets.

XLVII. That the non-official Presidents of City Municipalities, Town Municipalities and Minor Municipalities be elected by the general body of voters instead of by the Municipal Councillors;

That non-official Presidents of District and Taluk Boards be also elected by the general body of voters instead of by the members of the Local Bodies.

XLVIII. That the Village Panchayets be so constituted as to consist of the Yejamans or elders of the Village and, if possible, the head of each family.

Concluding Remarks of the President.

The President made the following remarks in concluding the proceedings of the Conference :—

GENTLEMEN,

I am sure, I am voicing the feelings of this House when I say that we have had a successful session of the Conference. The action of Government in holding this Conference has been adversely commented upon in some quarters. It is not necessary for me to deal with these comments at any length as our friend Dewan Bahadur Mr. Puttanna Chetty has in his usual felicitous manner answered them in his speech. But as the President of this Conference, I feel, that a word of explanation is necessary from me. You have seen from the agenda and the discussions that have taken place that the Government had a number of important subjects concerning the administration of Local Bodies before them upon which they could not have passed satisfactory orders without consulting well-informed opinion thereon. The Government could not have awaited indefinitely till any other Conference was held and even then there was no guarantee that the question upon which the Government wanted advice would have been taken up and discussed by that Conference. It was not the intention of the Government to supplant any other private or semi official conference. It is open to the

local bodies in their corporate capacity or to individual members to hold their own conferences and submit their views to the Government. In Madras after the Government Conference of 1920, several private Conferences have been and are being held and I hope that this Conference will be a fore-runner of similar Conferences in our State.

As regards the proceedings of the Conference, I am glad to say that the members have shown their usual zeal and interest in discussing them. Some of the subjects were keenly debated and all the points were fully threshed out. The Members showed a thorough grasp of the subject and a good knowledge of the details of the administration. Their speeches were very informing and I must acknowledge that I gathered from them a lot of useful information about the practical difficulties in the way of the successful working of the Scheme of Local Self-Government and about the many flaws and drawbacks that exist in our rules and regulations. I shall take the earliest opportunity to remedy these defects.

Ever since the passing of the Government Order on Local Self-Government there has been considerable awakening of the civic consciousness of the people. There is very keen competition for the membership of Municipal Councils and Taluk and District Boards and very keen interest is being taken in Municipal and Local Boards Administration. As the Member in charge of the Local Self-Government portfolio, I have come in direct contact with the work of Municipal Councils and their non-official Presidents and Vice-Presidents, and I must bear testimony to the fact that the work of the Municipal Councils has considerably improved under their guidance. The late Mr. Subbiah was a bright example of what a non-official President could be and I take this opportunity to pay my quota of tribute to his memory. He brought an energy and freshness to his work that was simply admirable and his notes of inspection would have done credit to the most experienced Civil Servant, who had grown grey in the service of the Government. He had bestowed his heart upon the resuscitation of the Village Panchayet and within the short time he was in charge of the President's Office, he had succeeded in creating a stir in the village life.

The resolutions that you have passed now, if accepted by the Government, will constitute a fresh advance upon the reforms inaugurated in 1918 and I have no doubt that you will acquit yourselves under the new conditions in such a way as to become entitled to the grant of a further instalment of Concessions at an early date.

Of the important measures which you have deliberated upon and upon which you have come to, what I consider, satisfactory decisions are the reconstitution and readjustment of the functions of Local Boards and Village Panchayets. You are perfectly aware of the fact that the success of the whole scheme of Local Self-Government depends upon the successful working of the District Boards—the initiative they take and the enthusiasm and energy they infuse into the lower limbs of their constitutional body. The Taluk Board should be made a really useful body since you have resolved to continue it. By the resolutions we have passed we are perpetuating the system of official hierarchy to which we have become accustomed by our association with the Revenue and Judicial systems. But the true conception of a District Board Administration should be that of a big city with a large number of suburbs attached to it having separate self-governing institutions of their own and the District Board as a Federal Council guiding them and co-ordinating their functions and exercising control over the services common to all. The District Board must try to possess all the powers which a big city council has and function in the same way. Greater attention will, I am sure, be paid in future towards the development of Panchayets, and education and improvement of Agriculture and live-stock will occupy the front place in their programme of work.

I am glad to find that you showed no disposition whatever to grab at power, but as practical men of business you have consented to the exercise of some of the powers which you undoubtedly possess being delegated to Heads of Departments in order to ensure efficiency and contentment of services. You seem to be fully alive to the value of discipline and I am glad to find that you do not discard outside check and supervision. These are very healthy signs and augur well for the future of the Local Self-Government Scheme.

GENTLEMEN, I wish you good-speed in the discharge of the onerous duties that will be imposed upon you and I must thank you for the help you have given me in the discharge of my duties as President and the respect you have shown to the Chair and the willing obedience you have yielded to its rulings.

Vote of Thanks to the President.

Mr. C. Narasimhaiya of Mysore proposed a vote of thanks to the President for the able manner in which he had conducted the deliberations of the Conference and the patient hearing given to the Members in the course of the discussions and expressed the hope that, as the Conference was presided over by the Member in charge of the Local Self-Government Portfolio, the resolutions would be sympathetically viewed by Government. He added that both himself as well as the other members of the Conference associated themselves with the President in all that had fallen from him in regard to the late Mr. M. Subbiah, whose premature death every one deplored sincerely.

Mr. Malali Venkataramaiya of Saklespur also thanked the President for the courtesy extended to the members during the course of discussions.

Dissolution of the Conference.

The Conference was dissolved at 7-45 P.M. after three cheers to His Highness proposed by Mr. Karnick Krishnamurthi Rao and responded to by every one present.

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